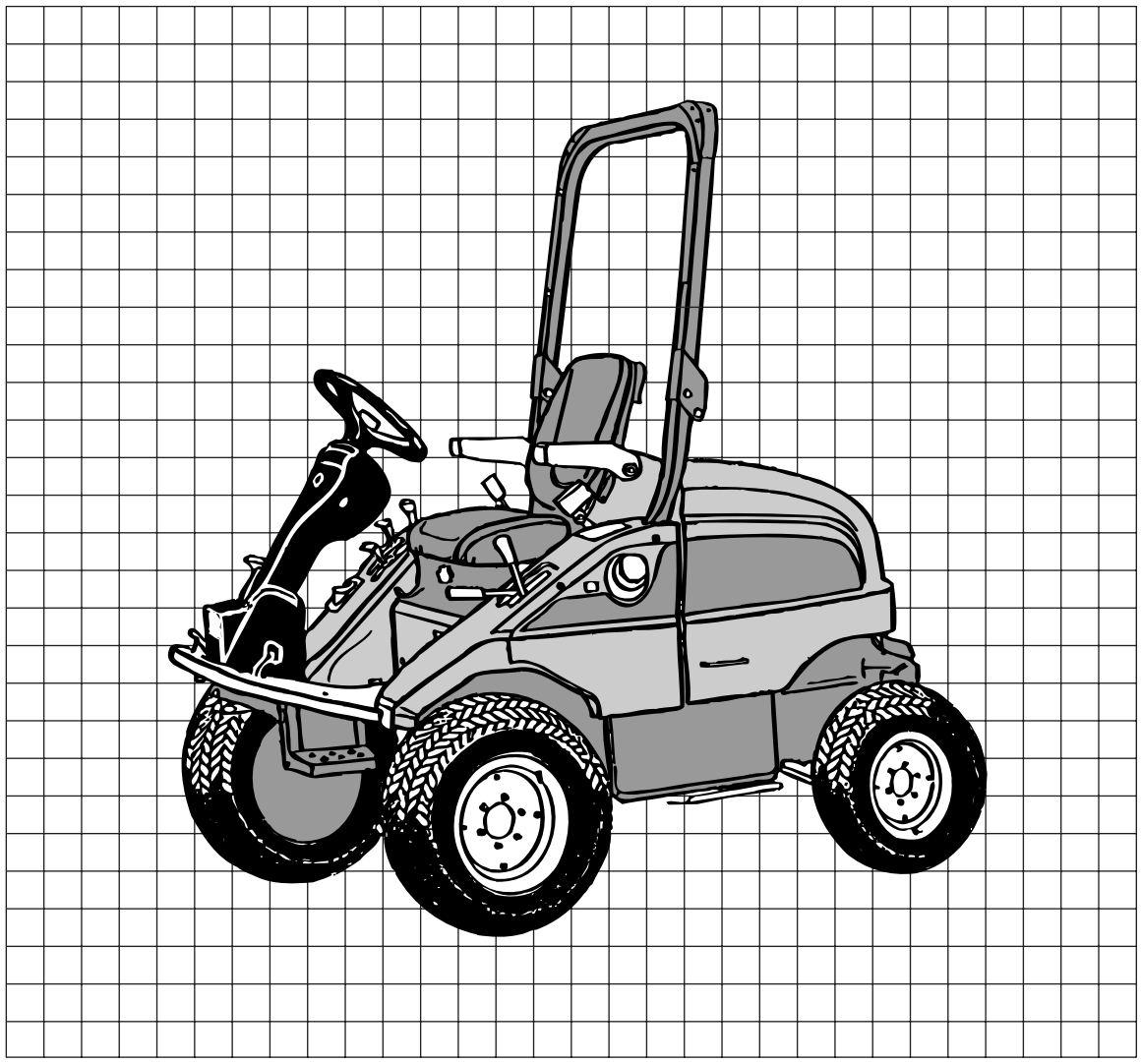
SHIBAURA

TRACTOR OPERATOR'S MANUAL

MODEL

CM314 CM374



IHI Shibaura Machinery Corporation

IHI GROUP

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TO THE OWNER:

This manual contains information concerning the operation, adjust, and maintenance of the CM Mower. You have purchased a dependable machine, but only by proper care and operation can you expect to receive the performance and long service built into this Mower. Please have all operators read this manual carefully and keep the manual available for reference.

Your SHIBAURA dealer will instruct you in the general operation of your Mower.(Refer to the "Delivery Report" at the back this of this manual.) Your dealer's staff of factory-trained service technicians will be glad to answer any questions that may arise regarding the operation of you Mower.

Your SHIBAURA dealer carries a complete line of genuine SHIBAURA parts.These parts are manufactured and carefully inspected to insure high quality and accurate fitting of any necessary replacement parts.

CAUTION:THIS SYMBOL IS USED THROUGHOUT THIS BOOK WHENEVER PERSONAL SAFETY IS INVOLVED. TAKE TIME TO READ AND FOLLOW THE INSTRUCTIONS. BE CAREFUL!

CAUTION:PICTURES IN THIS MANUAL MAY SHOW PROTECTIVE SHIELDING OPEN OR REMOVED TO BETTER ILLUSTRATE A PARTICULAR FEATURE OR ADJUSTMENT.

BE CERTAIN, HOWEVER, TO CLOSE OR REPLACE ALL SHIELDING BEFORE OPERATING THE MACHINE.

IMPROVEMENTS

IHI-SHIBAURA is continually striving to improve its products. We reserve the right to make improvements or changes when it becomes practical and possible to do so, without incurring any obligation to make changes or additions to the equipment sold previously.

SAFETY RULES

1. SAFETY RULES

Please pay particular attention to all boxed-parts in the text which have the sign ⚠.

This sign warns you to be careful when carrying out certain functions.

⚠ DANGER:
Indicates serious injury or death will result if instruction are not followed.

⚠ WARNING:
Indicates a strong possibility that serious injury or death could result if instructions are not followed.

⚠ CAUTION:
Indicates a possibility that minor injury can result if instructions are not followed.

NOTE: Gives helpful information.

Labels attached to certain parts of the Front Mower give important safety information.

Please read them carefully. Should a label detach itself or become illegible, contact your dealer for a replacement.

SAFETY INSTRUCTIONS

A) TRAINING

1) Read the instructions carefully. Be familiar with the controls and the proper use of the equipment. Learn how to stop the engine quickly.

2) Only use the Front Mower for the purpose for which it was made, that is, the cutting and collection of grass. Any use not specifically indicated in the instruction handbook can be dangerous and result in damage to the machine, and will also result in the annulling of the warranty and the manufacturer declining all responsibility.

3) Never allow children or people unfamiliar with these instructions to use Front Mower. Local regulations may restrict the age of the operator.

4) Never use the Front Mower.
   - When people, especially children, or pets are nearby.
   - If the operator has taken medicine or substances that can affect his ability to react and concentrate.

5) Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.

6) Do not carry passengers.

7) The operator of a Front Mower must carefully follow the driving instructions, particularly:
   - The need for care and concentration when using Front Mowers;
   - That control of a Front Mower sliding on a slope will not be regained by the application of the brake.

   The main reasons for loss of control are:
   - Insufficient wheel grip;
   - Being driven too fast;
   - Inadequate braking;
   - The type of machine is unsuitable for its task;
   - Lack of awareness of the effect of ground conditions, especially slopes;
   - Incorrect hitching and load distribution.

8) The Front Mower is equipped with a series of safety microswitches and devices which must never be removed, altered or tampered with. Removing these devices invalidates the warranty and the manufacture declines any responsibility.

B) PREPARATION

1) While mowing, always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.

2) Thoroughly inspect the area where the equipment is to be used and remove all objects which may be thrown by the machine (stones, sticks, metal wire, bones, etc.)

3) WARNING: Engine fuel is highly flammable:

   - Store fuel in containers specifically designed for this purpose.

   - Refuel using a funnel and outdoors only. Do not smoke while refuelling or whenever handling the fuel.

   - Add fuel before starting the engine. Never remove the cap of the fuel tank or add fuel while the engine is running or when the engine is hot.

   - If fuel is spilled, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until the fuel has evaporated and the fumes dispersed.

   - Tighten caps of all fuel tanks and containers securely.

4) Replace faulty silencers.

5) Before using, always carry out visual inspection, particularly of the blades, seeing that the screws and cutter assembly are not worn or damaged. Replace worn or damaged blades and screws in sets to preserve balance.

6) Before mowing, attach the discharge opening guards (grass-catcher or deflector).

7) Take care as the rotation of one blade can cause the other blade to turn.

C) OPERAITON

1) Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.

2) Mow only in daylight good artificial light.

3) Avoid operating the equipment in wet grass, where feasible.

4) Before starting the engine, disengage the blades, shift into neutral and engage the parking brake.

5) Do not use on slopes of more than 10°(17%).

6) Remember there is no such thing as a “safe” slope.

   Travel on grass slopes requires particular care. To guard against overturning:

   - It is advisable to use a rear counterweight (supplied on request);

   - Do not stop or start suddenly when going up or downhill;

   - Always keep the machine in gear, especially when traveling downhill;

   - Machine speeds should be kept low on slopes and during tight turns;

   - Stay alert for humps and hollows and other hidden hazards;

   - Never mow across the face of the slope.

7) Stop the blades rotating before crossing surfaces other than grass. When moving the Front Mower away from the lawn disengage the blades and put the cutting plate into the highest position.

8) Never operate the Front Mower as a Mower-deck with defective guards, or without safety devices, for example deflectors and/or grass catchers, in place.

9) Do not change the engine governor settings or overspeed the engine. Operating the engine at excessive speed can increase the hazard of personal injury.

10) Before leaving the operator’s position:

   - Disengage the blades and lower the Mower-deck.

   - Charge into neutral and set the parking brake.

   - Stop the engine and remove the key.

11) Disengage blades, stop the engine and remove key:

   - Before carrying out any work beneath the cutting deck or unclogging the chute;

- Before checking, cleaning or working on Front Mower;

- After striking a foreign object. Inspect the Front Mower for damage and make repairs before restarting and operating the Front Mower;

- If the Front Mower starts to vibrate abnormally (immediately check and remove the cause of the vibration)

12) Disengage drive to blades when transporting or not in use. Disengage the blades for them to stop before emptying the grass-catcher.

13) Stop the engine and disengage blades:

- Before refuelling.

- Every time the grass-catcher is removed or replaced.

- Before making height adjustment.

14) Reduce the throttle setting during engine shut down and turn the fuel off at the conclusion of mowing, following the instructions in the handbook.

15) Do not put hands or feet near or under rotating parts. Keep clear of the discharge opening at all times.

16) Use care when pulling loads of using heavy equipment.

- Use only approved drawbar hitch paints.

- Limit loads to those you can safely control.

- Do not turn sharply. Use care when reversing.

17) Watch out for traffic when crossing or near roadways.

18) When using any attachments, never direct discharge of material toward bystanders nor allow anyone near the machine while in operation.

D) MAINTENANCE AND STORAGE

1) Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition. Regular maintenance is essential for safety and for maintaining performance levels.

2) Never store the equipment with fuel in the tank inside a building where fumes may reach a flame or a spark or a source of extreme heat.

3) Allow the engine to cool before storing in an enclosed space.

4) To reduce the fire hazard, keep the engine, exhaust silencer, battery compartment and fuel storage area free of grass, leaves, or excessive grease. Always empty the grass-catcher and do not leave garden rubbish containers within a room.

5) Check the deflector and grass-catcher frequently for wear and deterioration.

6) For reasons of safety, do not use the equipment with worn or damaged parts. Parts are to be replaced and not repaired. Use genuine spare parts. Parts which are not of an equivalent quality can damage the equipment and be dangerous for your safety.

7) If the fuel tank has to be drained, this should be done outdoors and when the engine is cool.
8) Wear strong work gloves when removing and reassembling the blades.

9) Check the blades' balance after sharpening.

10) Take care as the rotation of one blade can cause the other blade to turn.

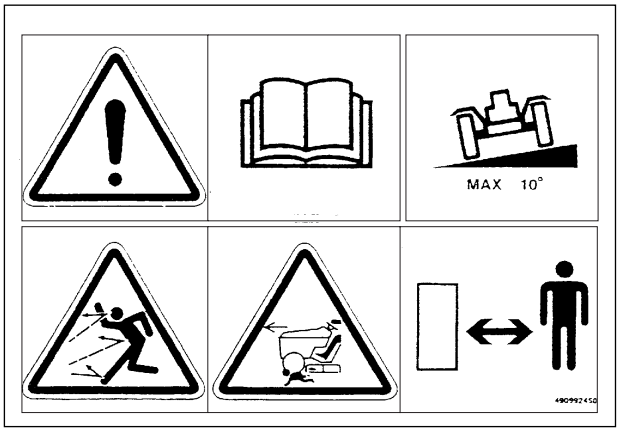
11) When the machine is to be parked, stored or left unattended, lower the cutting means.

12) The ignition key must never be left inserted in the machine, or where children or persons not familiar to the machine may reach them.
Before any maintenance or repair, remove the ignition key.

SAFETY AND INSTRUCTION DECALS

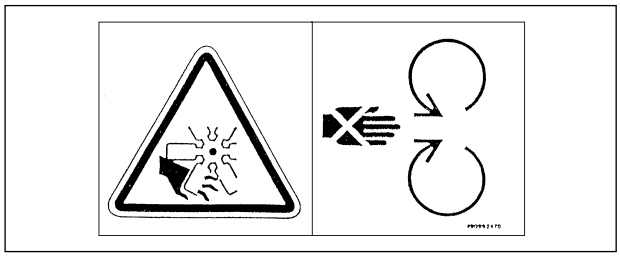
You Front-tractor must be used with care. Therefore, decals have been placed on the machine, to remind you pictorially of main precautions to take during use. Their meaning is explained below.
We also strongly recommend to carefully read the safety instructions given in the concerned chapter of this manual.

SAFETY DECALS

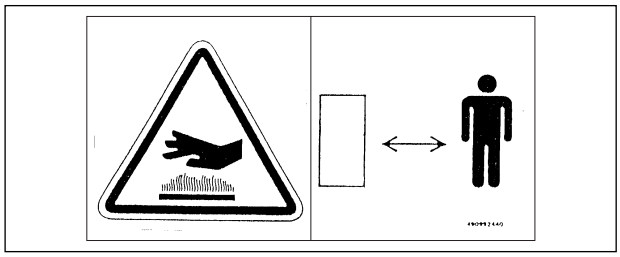


- Read this Operator's Manual before using the Front-tractor.
- Keep other people at a distance while using.
- Make sure that children stay clear of the machine all time when engine is running.
- Do not use this machine on slopes greater than 10°.

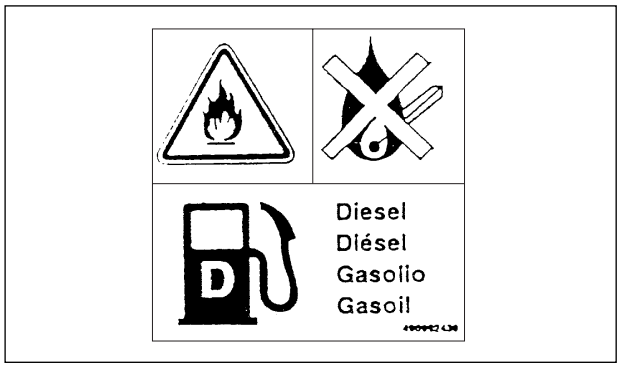
- Batteries produce explosive gas. Keep sparks and flames away.
- Battery contains sulfuric acid. Wear protective clothing and use eye protection.



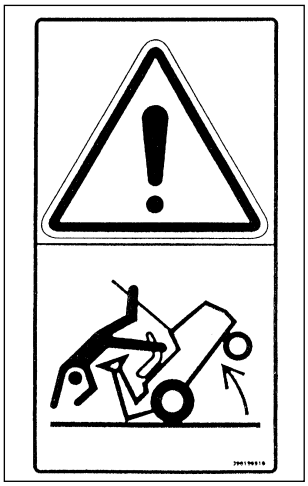
- Never reach into rotating parts while engine is running.



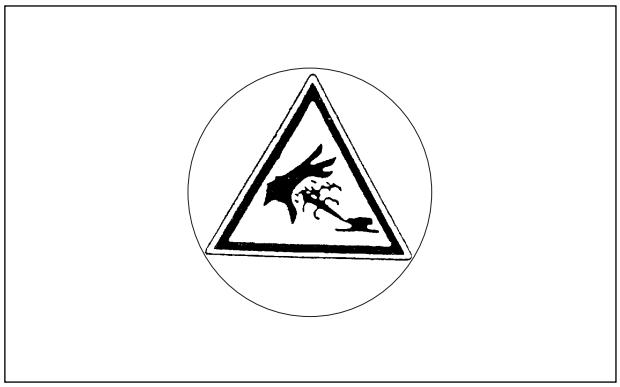
- Stay clear of hot surface.



- Use diesel fuel.
- Diesel fuel is flammable.
- Add diesel fuel before starting the engine.
- Never remove the fuel tank cap or add diesel fuel while the engine is running or when the engine is hot.
- Refuel outdoors only and do not smoke while refuelling.

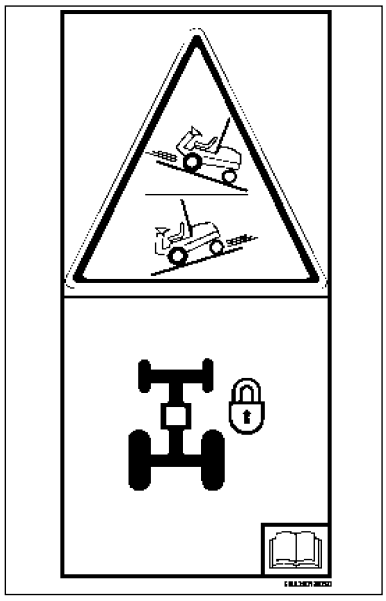


- Do not depress the brake pedal quickly. Quick brake will cause upset of the machine.



- Do not open when hot.
- Contents under pressure.

- Always lock ROPS in upright position unless it has to be folded down to allow operation underneath trees or bushes.
- Always wear seat belt expect for ROPS is lowered.
- Do not attach ropes or chains to ROPS for pulling purposes.
  Use of ROPS and seat belt reduce the chance of injury or death if rollover or upset occurs.

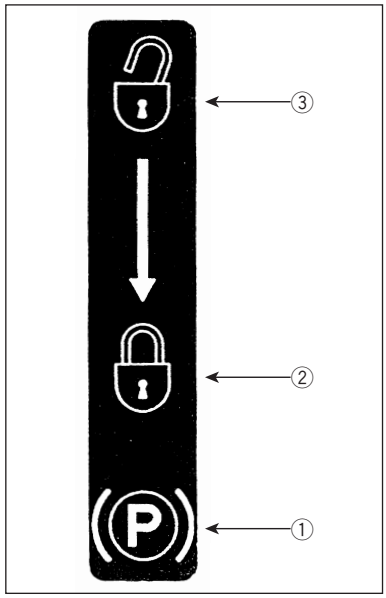


- While driving on slopes, always use Permanent/Full Time 4WD.

INSTRUCITON DECALS

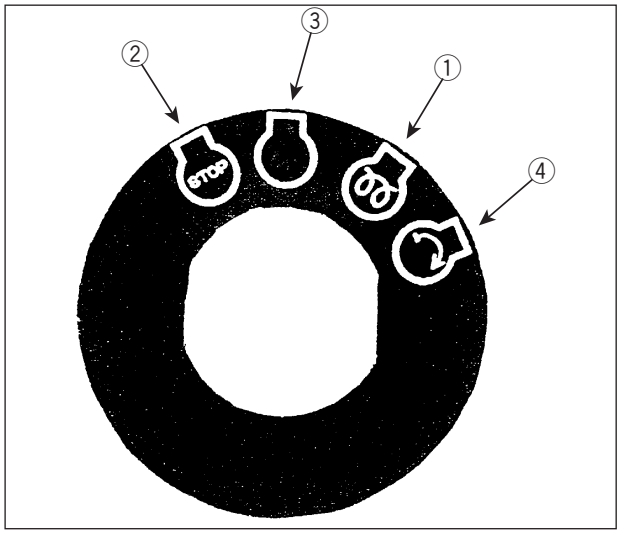
Parking Brake

① Parking Brake
② “Lock” Position
③ “Release” Position



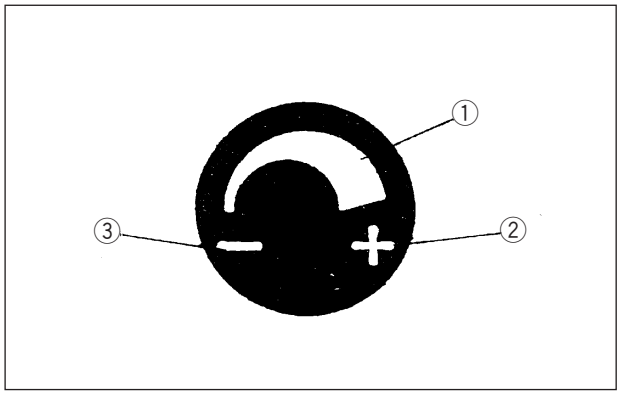
Key Switch

① Engine “HEAT” Position
② Engine “STOP” or “OFF” Position
③ Engine “ON” Position
④ Engine “START” Position



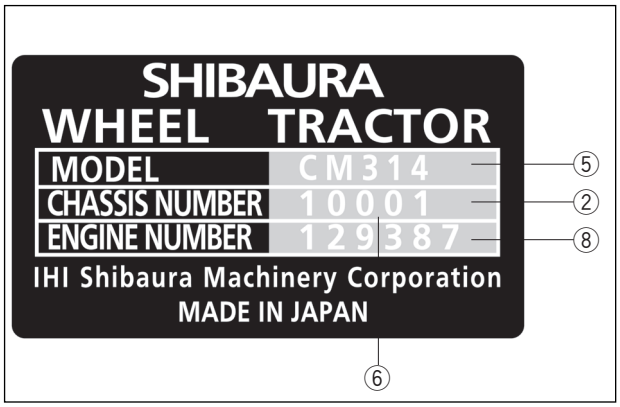
Weight Transfer

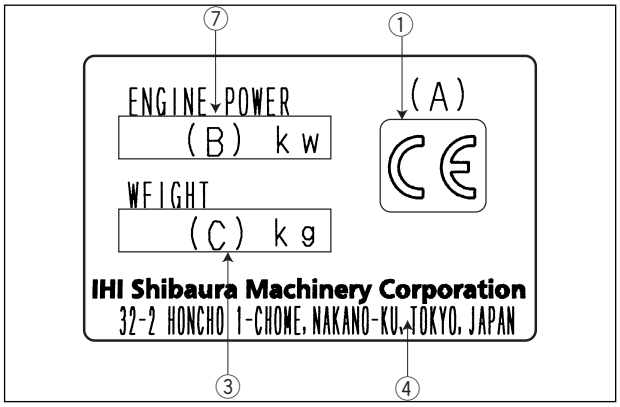
① Continuously variable
② Increase
③ Decrease



MACHINE IDENTIFICATION PLATE

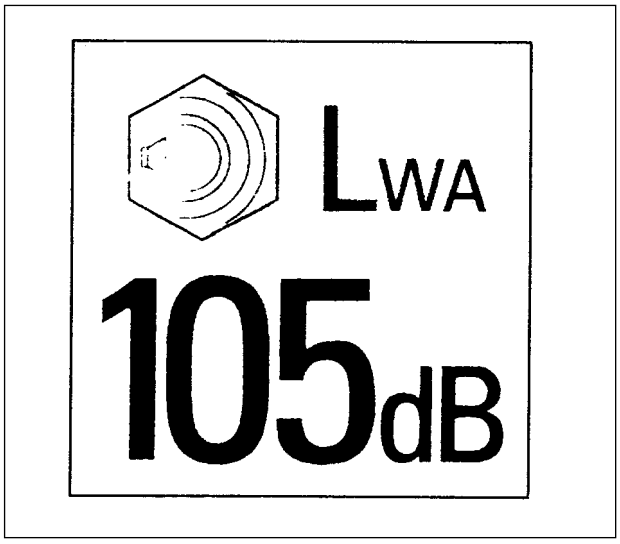
① CE Conformity Mark
② Year of Manufacture
③ Weight in kgs
④ Name and Address of Manufacturer
⑤ Type of Front Mower
⑥ Serial Number
⑦ Engine Power
⑧ Engine Number





GUARANTEED SOUND POWER LEVEL MARK

Guaranteed Sound Power Level According to Directive 2000/14/EC



SECTION 1
GENERAL INFORMATION

PLEASE READ CAREFULLY:

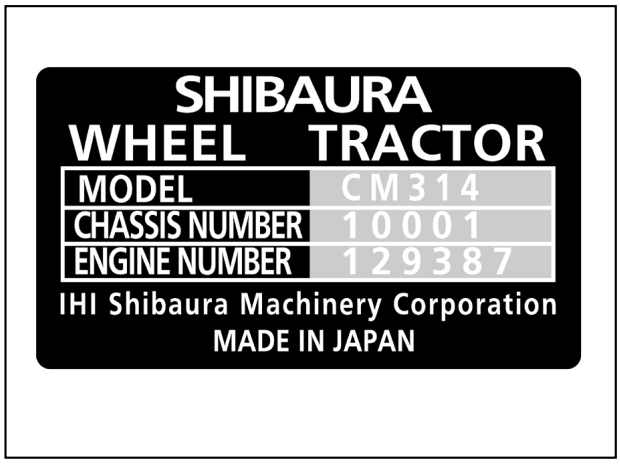
For a complete list of the pre-delivery service checks performed by your dealer, refer to the PRE-DELIVERY SERVICE checklist found at the back of this manual. Keep one copy as your record of the service performed. The other copy should be removed from the manual and kept by your dealer. MAKE SURE THAT BOTH COPIES ARE COMPLETED AND THAT YOU AND THE DEALER SIGN BOTH COPIES.

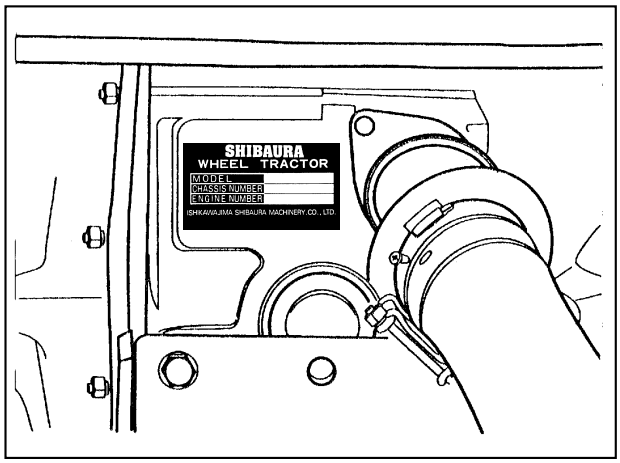
A PRODUCT IDENTIFICATION PLATE is located in the front transmission case under the front body of the mower.
The numbers on the plate are important in the event your mower should require future service. For your convenience, have your dealer record these numbers in the appropriate spaces below.

IHI Shibaura Machinery Corporation is continually striving to improve its products. We reserve the right to change prices, specification, or equipment at any time without notice.

All data given in this book is subject to production variations. Dimensions and weights are approximate only, and the illustrations do not necessarily depict Mower in standard condition. For exact information about any particular Mower, please consult your SHIBAURA dealer.

This Mower has been designed for doing light work, such as mowing, blowing snow. Don not attempt to use implements that were not designed for this mower, as they may cause damage to the mower.





MINIMUM HARDWARE TIGHTENING TORQUES

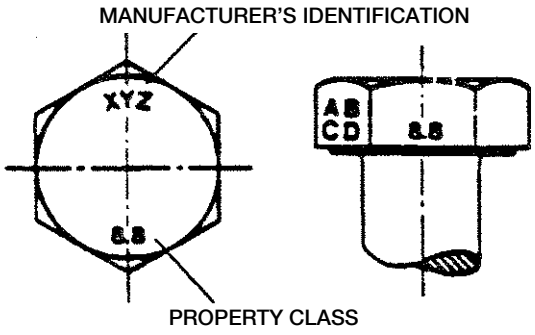
IN FOOT POUNDS (NEWTON-METERS) FOR NORMAL ASSEMBLY APPLICATIONS

METRIC HARDWARE AND LOCKNUTS

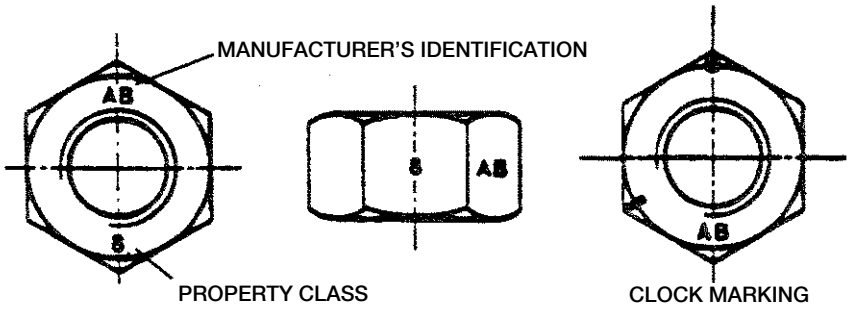
NOMINAL SIZE	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCKNUT CL.8 W/CL8.8 BOLT
	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	
M4	15*(1.7)	19*(2.2)	23*(2.6)	30*(3.4)	33*(3.7)	42*(4.8)	16*(1.8)
M6	51*(5.8)	67*(7.6)	79*(8.9)	102*(12)	115*(13)	150*(17)	56*(6.3)
M8	124*(14)	159*(18)	195*(22)	248*(28)	274*(31)	354*(40)	133*(15)
M10	21 (28)	27 (36)	32 (43)	41 (56)	45 (61)	58 (79)	22 (30)
M12	36 (49)	46 (63)	55 (75)	72 (97)	79 (107)	102 (138)	39 (53)
M16	89 (121)	117 (158)	137 (186)	177 (240)	196 (266)	254 (344)	97 (131)
M20	175 (237)	226 (307)	277 (375)	358 (485)	383 (519)	495 (671)	195 (265)
M24	303 (411)	392 (531)	478 (648)	619 (839)	662 (897)	855 (1160)	338 (458)

NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION
HEX DCAP SCREW AND CARRIAGE BOLTS
CLSSES 5.6 AND UP



HEX NUTS AND LOCKNUTS
CLASSES 05 AND UP



INTERNATIONAL SYMBOLS

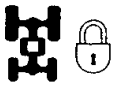
As a guide to the operation of your tractor, various international symbols have been used on instruments and controls. These symbols are depicted and described below.

Hours Recorded

Engine Water Temperature

Air Filter

Engine Oil Pressure


Full Tiem 4WD

Auto 4WD

Continulusly Variable

Increase

Decrease

Fuel Level

High Range

Low Range

Neutral

Diesel Fuel

Glow

Engine Stop

Engine Oil

Engine Start

Parking Brake

Lock

Release Lock

Differential Lock

Vloume Empty

Volume Full

Battery

Power Take-off (ON)

Power Take-off (OFF)

“Tortoise”-SLOW or Minimum Setting

“Hare”-FAST or Maximum Setting

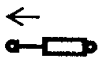
Warning

Control Lever Hold

Rock Shaft (Raised)

Rock Shaft (Lowered)

Remote Cylinder (Retracted)

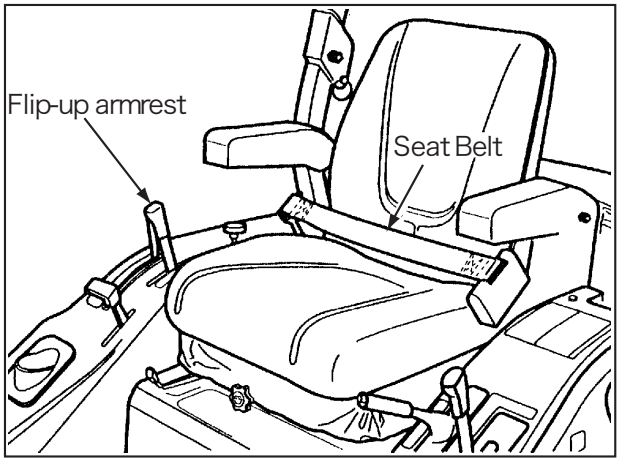

Remote Cylinder (Extended)

SECTION 2
OPERATION
CONTROLS AND INSTRUMENTS

SEAT, SEAT BELT AND ROPS

OPERATORS SEAT

Your seat is adjustable to obtain the most comfortable position.



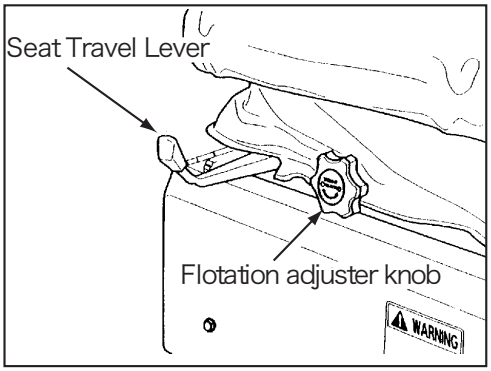
Seat Travel Lever

By tilting the Seat Travel Lever outward, the seat can be moved in a range of 6.50 in. (165 mm) in forward and backward direction, and it can be fixed in a position as you like.

Seat Flotation

To adjust for operator weight, turn the flotation adjuster knob: turn it to the right and it will be for move (+), and turn it to the left, it will be for less (-).

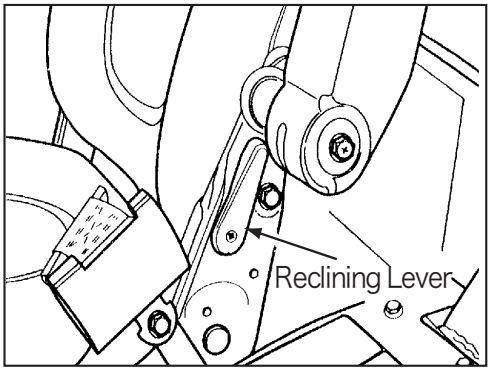
IMPORTANT: If not adjusted properly, the seat switch will not close to allow engine to start.



WARNING: DO NOT ATTEMPT BYPASS SEAT SAFETY INTERLOCK SWITCH.

Reclining Lever

By tilting the reclining lever forward, the inclination of the back of the seat can be changed to any position you like.



Seat Belt

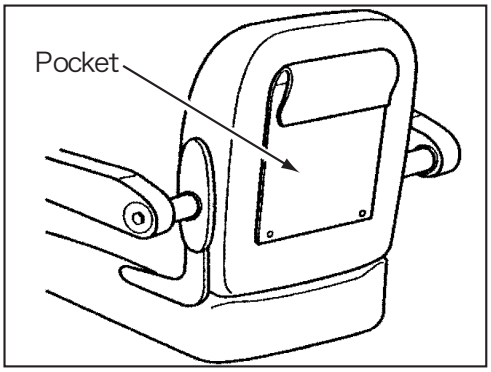
Always fasten the seat belt before starting.

Flip-up Armrest

The armrest is used by tilting it forward.

Pocket

A storage pocket is located at the rear of the seat. This is the recommended storage area for the operator's Manual.



STEERING WHEEL

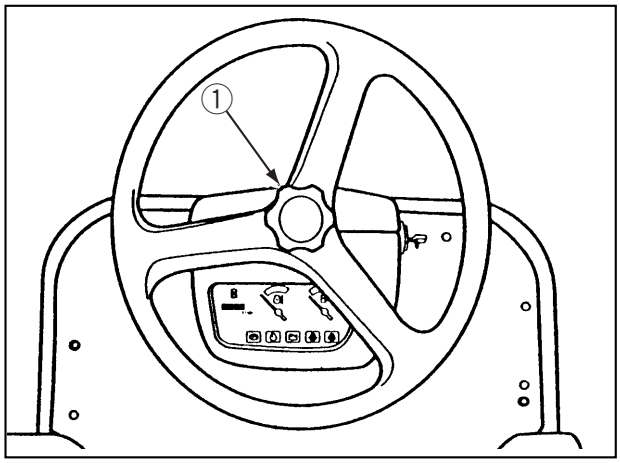
ADJUSTING THE STEERING WHEEL

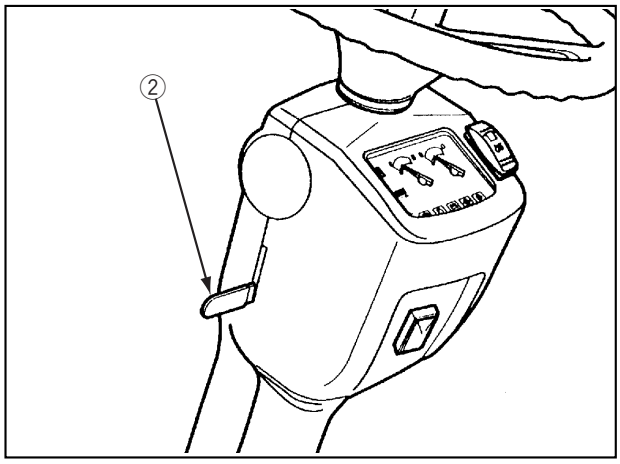
The CM mower is equipped with an adjustable steering wheel which can telescope and tilt.

To telescope the wheel, turn the wheel hub ① to the left and raise or lower the steering wheel to the desired height. Then turn the hub to the right to lock it into position.

NOTE: When locking the hub into position, do not overtighten.

To tilt the wheel, pull up on the lever ② and move the steering wheel fore or aft the desired position. If the wheel is not held in position when the lever is raised, the steering wheel will spring to its most forward position. Use this feature to gain additional clearance when mounting and dismounting the CM mower.





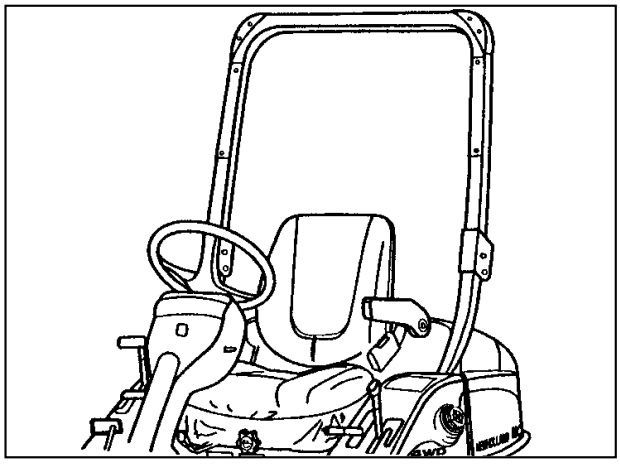
ADJUSTMENT THE STEERING WHELL

ROLL OVER PROTECTIVE STRUCTURE (ROPS)

A Roll Over Protective Structure (ROPS) and seat belts are standard equipment.

DO NOT remove a ROPS and seat belts. ROPS when used with seat belt is effective in reducing injuries during unit overturn accidents. Overturning the unit without a ROPS can result in serious injury or death.

WARNING! WHEN IMPROPERLY OPERATED, THE UNIT CAN ROLL OVER OR UPSET! FOR LOW CLEARANCE USE ONLY, THE ROLL BAR CAN BE LOWERED. NO PROTECTION IS PROVIDED WHEN THE COMMERCIAL MOWER IS OPERATED WITH THE ROLL BAR IN THE LOWERED POSITION. ALWAYS RAISE THE ROLL BAR IMMEDIATELY AFTER LOW CLEARANCE USE. WHEN THE UNIT IS BEING DRIVEN TO AND FROM A LOW CLEARANCE JOB, THE ROLL BAR SHOULD BE IN THE RAISED POSITION. WHEN THE ROLL BAR IS LOWERED, USE OF THE SEAT BELT IS NOT RECOMMENDED. ALWAYS USE THE SEAT BELT WHEN THE ROLL BAR IS RAISED. SEAT BELTS SAVE LIVES WHEN THEY ARE USED.



ROLL OVER PROTECTIVE STRUCTURE (ROPS)

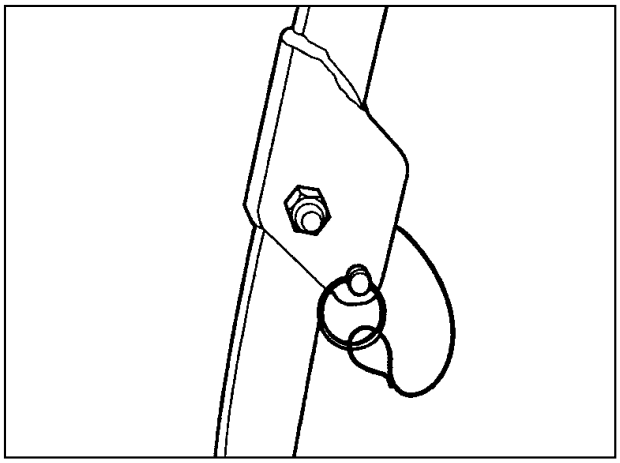
DO NOT weld on ROPS, or use a damaged ROPS. Replace ROPS if cracked or damaged.

If the seat belt is to be cleaned, use soap and water. Do not use carbon tetrachloride, naphtha, etc., as these will weaken the webbing. For the same reason, do not bleach or dye the webbing. Replace seat belt if worn or damaged.

Roll Over Protective Structure (ROPS), and seat belts are available from your SHIBAURA Dealer.

Foldable ROPS

The ROPS can be folded by removing right and left retaining rings and by pulling out the pins. Operate with the ROPS in the“UP”position whenever possible. Use the ROPS in the “folded”position only when it is absolutely necessary.



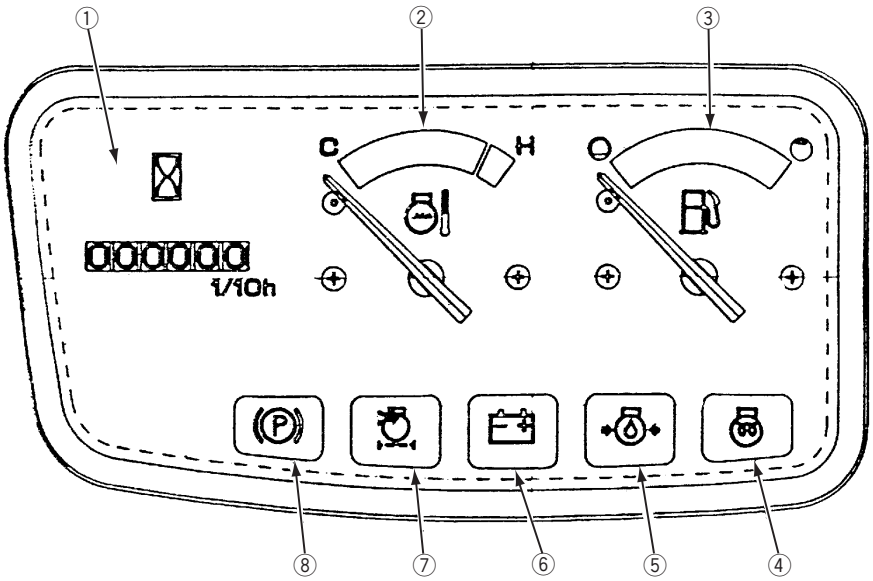
WARNING: DO NOT OPERATE THE MOWER WITH THE ROLLOVER PROTECTIVE STRUCTURE FOLDED AS A STANDARD OPERATING MODE. A FOLDED ROPS DOES NOT PROVIDE ROLLOVER PROTECTION.

WARNING: ALWAYS WEAR THE SEAT BELT WHEN THE MOWER IS EQUIPPED WITH A ROPS. HOWEVER, IF THE ROPS HAS BEEN REMOVED FROM THE MOWER, OR IF THE ROPS IN THE FOLDED POSITION, THE SEAT BELT SHOULD NOT BE USED.

WARNING: ALWAYS PULL FROM THE MOWER DRAWBAR. DO NOT ATTACH CHAINS OR ROPES TO THE ROPS FOR PULLING PURPOSES, AS THE MOWER CAN TIP BACKWARDS.

WARNING: WHEN DRIVING THROUGH DOOR OPENINGS OR UNDER LOW OVERHEAD OBJECTS, MAKE SURE THERE IS SUFFICIENT CLEARANCE FOR THE ROPS.

INSTRUMENT PANEL



① Engine Proof Meter
② Temperature Gauge
③ Fuel Gauge
④ Glow Plug Warning Light
⑤ Engine Oil Pressure Warning Light
⑥ Battery Charge Warning Light
⑦ Air Cleaner Restriction Warning Light
⑧ Parking Brake Warning Light

PROOF - METER

The Proof-Meter is located on the left side of the instrument panel.
Proof-Meter indicates hours of operation, and the figures after the decimal point express 0.1 hour.
Use the Proof-Meter as a guide to determine hourly service and maintenance intervals.

TEMPERATURE GAUGE

When the needle is in the middle area, the engine is at its normal operating temperature. The needle at the“H”end indicates an overheated engine.

WARNING: THE COOLING SYSTEM OPERATES UNDER PRESSURE WHICH IS CONTROLLED BY THE RADIATOR CAP. IT IS DANGEROUS TO REMOVE THE CAP WHILE THE SYSTEM IS HOT.

ALWAYS COVER THE CAP WITH A THICK CLOTH AND TURN THE CAP SLOWLY COUNTER-CLOCKWISE TO THE FIRST STOP. ALLOW ALL PRESSURE TO ESCAPE BEFORE REMOVING THE CAP COMPLETELY.

FUEL GAUGE

The needle indicates the amount of fuel in the tank.

WARNING LIGHTS

When the key start switch is turned“ON”the oil pressure and charge lights come on. After the engine has been started, the lights should go out within a few seconds. If they do not go out:

Glow plug indicator warning light: This light comes on when turning the key switch to the “HEAT”position or”START”position. This light will stay on for approximately 5 seconds in the “HEAT”Position.

Engine oil pressure warning light: Stop the engine immediately and investigate the cause. It is important to remember that this light indicates oil pressure only. The operator must regularly check the crankcase for proper oil level.

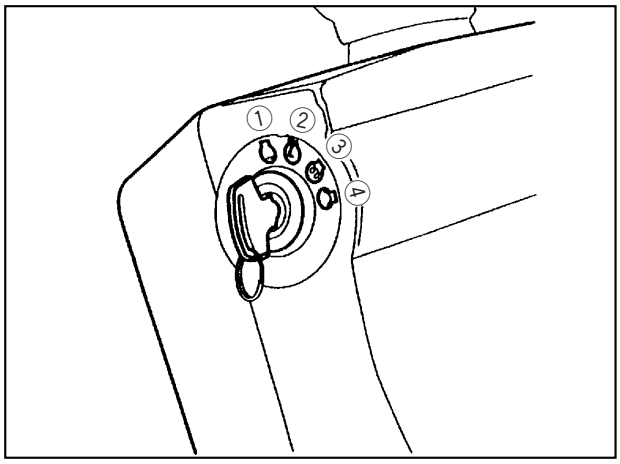
Charge indicator warning light: This is an indication that charging system is not operating normally. Investigate the cause as soon as possible, otherwise the battery will become fully discharged.

Air Cleaner Restriction Warning Light:
When the air cleaner element is clogged by foreign substance such as Dust and clear air is restricted to the engine, this light will illuminate.

Parking brake light: Is illuminated when the parking brake is applied.

SWITCHES

KEY START SWITCH



KEY START SWITCH
1. 'Off' Position
2. 'On' Position
3. Heat Position
4. Starter Position

Turning the key right to the "ON" position activates the warning lights and instruments. The pre-heat system is activated when the key is turned further to the right to the "HEAT" position, and the engine starts when the key is turned to the extreme right. The key spring returns to the"ON"position when released.

PRE - HEATING THE SYSTEM

Your CM mower has a diesel engine. Before starting a cold engine, the precombustion chambers must be heated.

To pre-heat the engine, turn the key switch to the"HEAT"position and hold the key in this position for approximately 5 seconds. The glow plugs heat the precombustion chambers during this time, and the engine will start.

The starting circuit can only be activated when:

1. Operator is seated.

2. HST foot pedals are released.

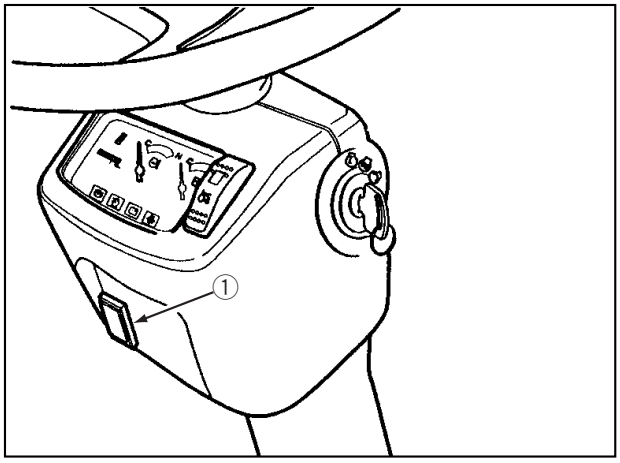
3. PTO lever is in the"OFF"position.

4. Master brake pedal is depressed or parking brake lever is locked.

For safe operation, always check to make certain the range shift lever and lift control lever are in neutral before attempting to start engine. Refer to page 2-12 for complete starting instructions.

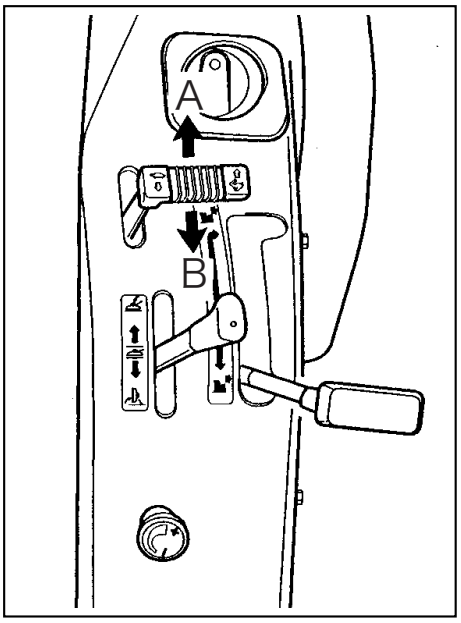
IMPORTANT: The key start switch must remain in the "ON" position while operating the engine. The warning lights and battery charging system will not function with the switch in the "OFF" position.

HEAD LIGHT SWITCH



The head light switch ①, is located under the instrument panel. Push switch"in"and key in"ON"position to illuminate headlight.

THROTTLE CONTROL



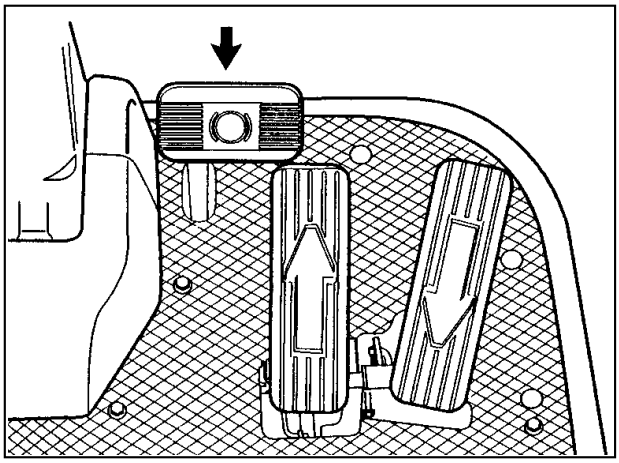
HAND THROTTLE CONTROL LEVER
A. Increase Engine RPM
B. Decrease Engine RPM

Push the throttle forward to increase engine rpm. Pull the throttle rearward to decrease engine rpm. Always operate mower deck or other attachment at full engine rpm.

BRAKE CONTROLS

MASTER BRAKE PEDAL

Depress the master brake pedal to stop the unit.
The cruise control switch (OPTIONAL) will be returned to the“OFF”position by depressing the master brake pedal, if the cruise control switch is in the“SET”position. Refer to page 2-8 for cruise control switch instructions.



BRAKE PEDALS

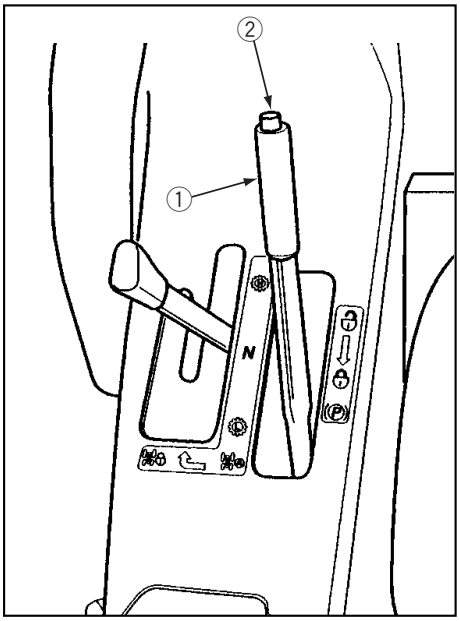
DUAL PEDAL TURNING BRAKE PEDALS (OPTIONAL)

The independent brake pedals are used to assist in turning in confined spaces at slow speed. The right brake pedal is used to brake the right front wheel. The left brake pedal is use to brake the left front wheel.

PARKING BRAKE

The parking brake should be applied whenever the CM Mower is parked or when the operator is out of the seat.

The parking brake will be applied by raising up the parking brake lever ①.
Releasing of the parking brake is made by lowering the lever while pressing down the button ②.



PARKING BRAKE

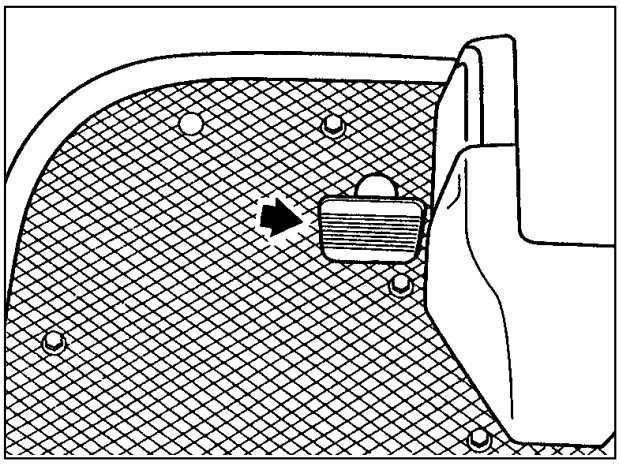
WARNING: DO NOT PARK ON AN INCLINE. IF NECESSARY TO PARK ON AN INCLINE BE SURE TO CHOCK THE WHEELS TO PREVENT ACCIDENTAL ROLLING OF THE MACHINE.

DIFFERENTIAL CONTROL

DIFFERENTIAL LOCK PEDAL

Depressing the pedal, locks the front axle shafts together, providing additional traction in wet or loose soil. Refer to page 2-17 for differential lock operating information.

WARNING: THE CM MOWER IS VERY DIFFICULT TO STEER WITH DIFFERENTIAL LOCK APPLIED.



DIFFERENTIAL LOCK PEDAL

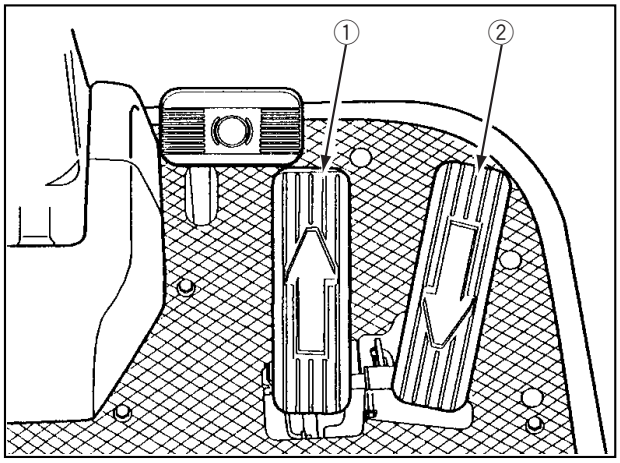
TRANSMISSION AND PTO CONTROLS

HST FOOT PEDALS

The ground speed of the unit is continuously variable from zero to full rated speed in each range.

The ground speed is controlled by HST foot pedals. Depress the forward travel pedal ① to progressively increase forward speed. For reverse travel, depress the reverse travel pedal ②.

NOTE: THE HST FOOT PEDALS MUST BE IN NEUTRAL TO START THE ENGINE.



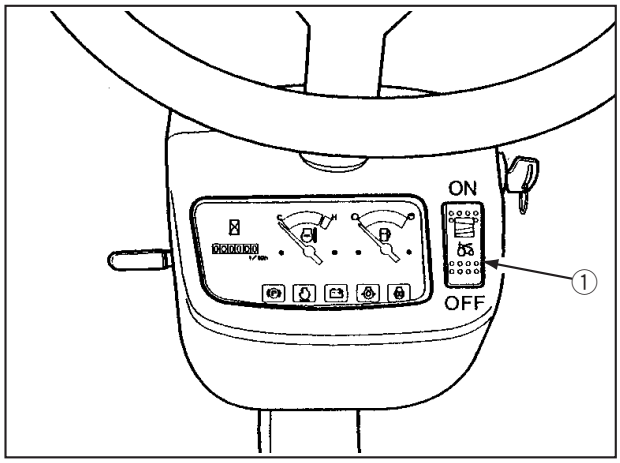
HTS FOOT PEDALS
1. Forward Travel Pedal
2. Reverse Travel Pedal

CRUISE CONTROL SWITCH

WARNING: TO AVOID INJURY, THE SWITCH SHOULD NOT BE PUT IN THE“ON” POSITION WHEN OPERATING AT TRANSPORT SPEED OR WHEN IN REVERSE.

The cruise control switch ①, may be used to maintain a constant forward speed when desired. After attaining the desired speed with the forward travel pedal, put the switch to the“ON”position, and the unit will maintain the set speed even if the pedal in released.

To cancel the speed setting or stop the unit, put the cruise control switch to the“OFF”position or firmly depress the master brake pedal.



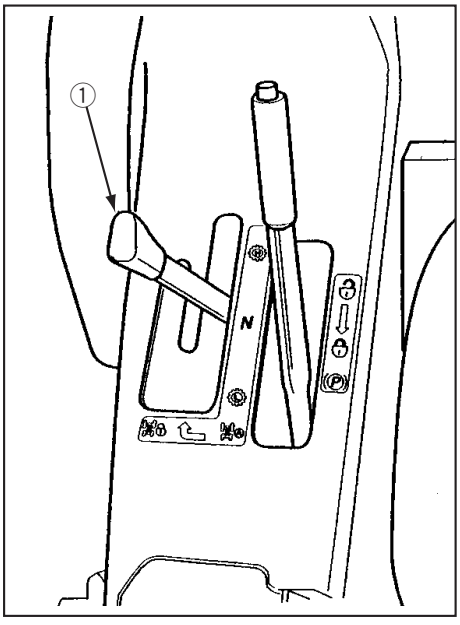
CRUISE CONTROL SWITCH

HST RANGE SELECTOR LEVER

Range Selector Lever and Four-Wheel Drive (FWD) Selector Lever are activated by the same lever.

The range selector lever ①, on the left side of the seat, can be shifted when the HST foot pedal is in the Neutral position to select, High range (“H”), Low range (“L”) or Neutral.

Range		Forward	Reverse
Low	km/h	0-10.0	0- 6.5
High	Km/h	0-24.5	0-15.8



HST RANGE SELECTOR LEVER

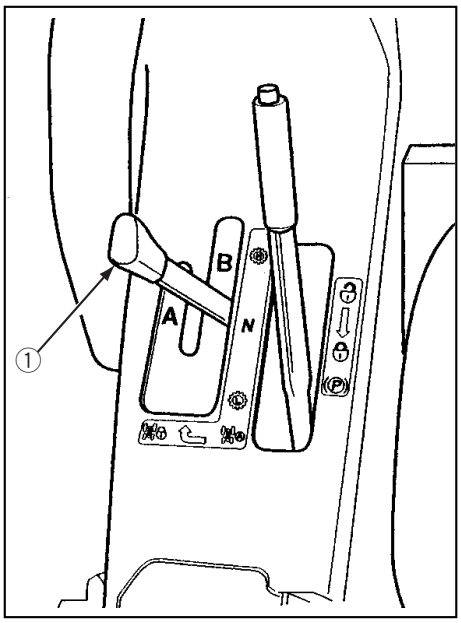
AUTOMATIC OR PERMANENT FOUR WHEEL DRIVE (FWD) SELECTOR LEVER

Four Wheel Drive (FWD) Selector Lever ① is activated by the same lever as the one that activates the Range Selector Lever.

When the lever is located in the position of Range Selector Lever, the tractor will run in Automatic FWD mode.

When the lever is brought to the outer slot, the mower will run in Permanent FWD mode.

The PERMANENT FWD selector lever activates rear axle drive for improved traction in adverse conditions.



FWD SELECTION
1. Lever
A. Permanent FWD
B. Auto FWD

WARNING: WHILE DRIVEING ON SLOPES, ALWAYS USE PERMANENT /FULL TIME 4WD.

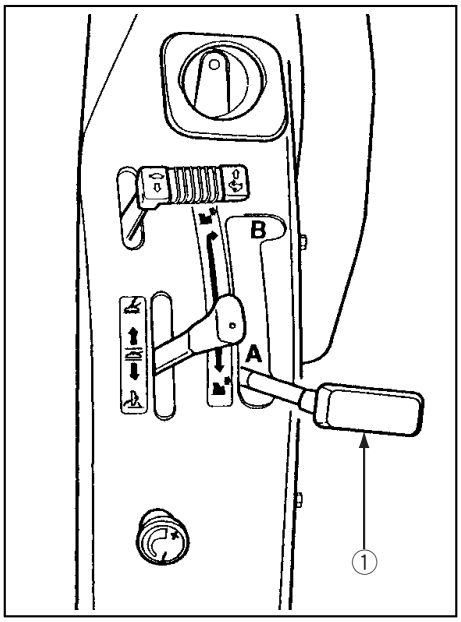
NOTE: When mower is in Permanent FWD mode, ONLY low range is engaged.

PTO CONTROL LEVER

The lever engages and disengages the PTO. Move the lever forward and hold it to engage the PTO. Move the lever rearward to disengage the PTO.

NOTE: PTO must be in disengaged position to start the engine.

IMPORTANT: Do not repeat the lever engages and disengage the PTO when Mower becomes clogged. Doing so may cause PTO clutch failure. If Mower becomes clogged, stop the engine, remove starter key and clean underside of deck.



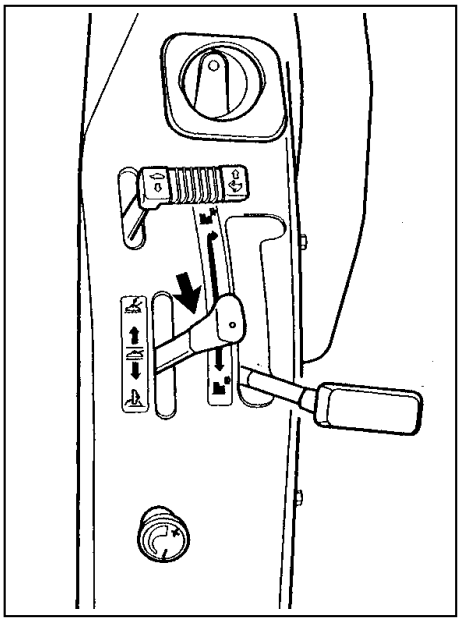
PTO SELECTION LEVER
A. Disengaged
B. Engaged

HYDRAULIC LIFT SYSTEM CONTROLS

LIFT CONTROL LEVER

The front mounted equipment can be raised and lowered by the lift control lever. Place handle in the forward position to lower and to the rearward position to raise front mounted equipment.

To lower and float the equipment, pull the lever forward. To raise the equipment, pull the lever rearward and hold it until the equipment is raised to the desired position.



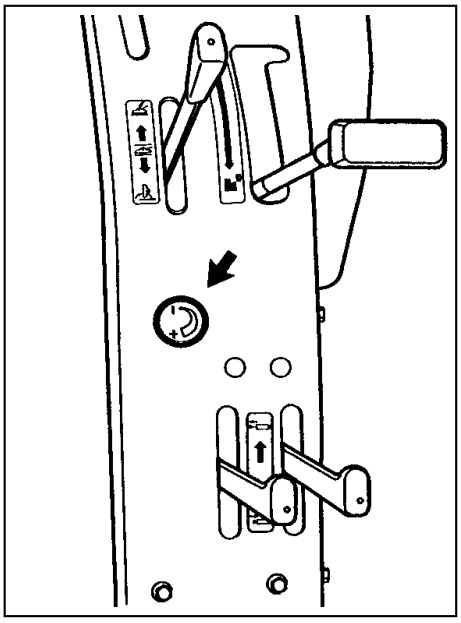
LIFT CONTROL LEVER

WARNING: TO AVOID PERSONAL INJURY, DISENGAGE THE PTO CONTROL LEVER BEFORE OPERATING THE LIFT CONTROL LEVER.

WEIGHT TRANSFER CONTROL

This feature enables the operator to transfer the weight of the mower or other equipment to the tractor unit.

Turn the knob clockwise, the effort of weight transfer is increased, refer to page 2-18 for weight transfer operating instructions.



WEIGHT TRANSFER VALVE

BREAK-IN PROCEDURES

Your CM Mower will provide long and dependable service if given proper care during the first 50-hour break-in period. During the first 50 hours of operation:

1. Avoid“lugging”the engine. Operating in too high a gear under heavy load may cause engine lugging, which is indicated when the engine will not respond to a throttle increase.

2. Use the lower gear ratios when pulling heavy loads and avoid continuous operation at constant engine speeds. You will save fuel and minimize engine wear by selecting the correct gear ratio for a particular operation. Operating the tractor in low gear with a light load and high engine speed wastes fuel.

3. Avoid prolonged operation at either high or low engine speeds without a load on the engine.

4. Check the instruments frequently and keep the radiator and oil reservoirs filled to recommended levels. Daily checks include the engine oil level, radiator coolant, and air cleaner.

5. After the first 50 hours of use, be sure to perform the maintenance items listed in the maintenance schedule.

STARTING THE ENGINE

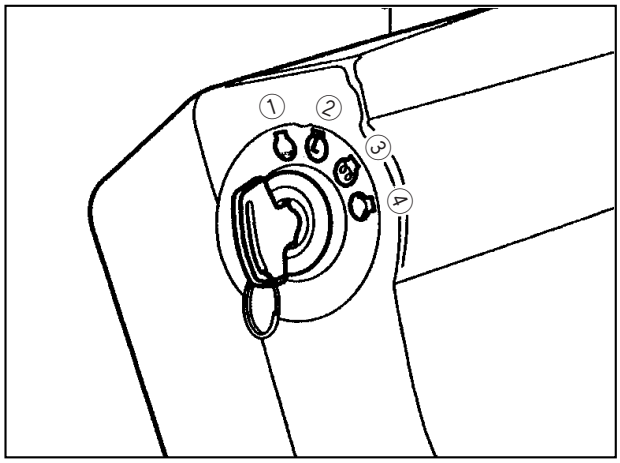
SAFETY STARTING DEVICE

Your CM Mower is equipped with four safety switches;

HST foot pedals, PTO lever, master brake pedal and seat. The engine can be started only when;

- HST foot pedals are released
- PTO lever is disengaged
- Depressing the master brake pedal or applying the parking brake
- Operator is in seat.

For safe operation the front mounted equipment should be lowered prior to starting the engine.



KEY SWITCH
1. 'STOP' Position
2. 'Run' Position
3. 'Cold Start' Position
4. 'starter' Position

WARNING: NEVER ATTEMPT TO START THE ENGINE WHILE STANDING BESIDE THE UNIT-ALWAYS SIT IN THE SEAT WHEN STARTING THE ENGINE.

IMPORTANT: DO NOT ENGAGE THE STARTING MOTOR CONTINUOUSLY FOR MORE THAN 30 SECONDS; DOING SO MAY CAUSE STARTING MOTOR FAILURE.

WARM WEATHER STARTING

To start a cold engine in warm weather or to start an engine that is warm;

1. Depress the master brake pedal fully and move the PTO and transmission shift levers to the off and neutral positions.
2. Move the hand throttle forward to a near half open position.
3. Turn the key switch to the"start"position. When the engine starts, release the key. Check to be sure the warning lights go out. If the engine fails to start after cranking for approximately 10 seconds, refer to the following "COLD WEATHER STARTING" information.

COLD WEATHER STARTING

If the engine fails to start using the preceding warm weather starting procedure or when starting the engine in cold weather;

1. Depress master brake pedal fully and move the PTO and transmission shift levers to the off and neutral positions.

2. Move the hand throttle forward to the full-open position.

3. Turn the key switch to“HEAT”to preheat the precombustion chamber and wait until the glow plug indicator warning light on the instrument panel goes out (approximately 5 seconds).

4. Turn the key switch to the“START”position. When the engine starts, release the key. Check to be sure the warning lights go out.

IMPORTANT: IN COLD WEATHER BELOW 23°F(-5°C) START THE ENGINE AFTER HOLDING THE KEY SWITCH TO THE “HEAT” POSITION FOR APPROXIMATELY 10 SECONDS EVEN IF THE GLOW PLUG INDICATOR WARNING LIGHT HAS GONE OUT.

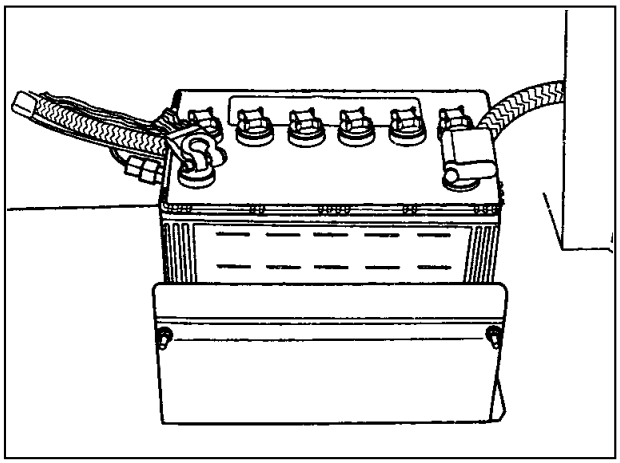
WARNING: DO NOT USE ETHER WITH THE THERMOSTAT STARTING AID.

STARTING THE ENGINE WITH JUMPER CABLES

WARNING: START ENGINE ONLY FROM THE OPERATOR‘S SEAT.

If it is necessary to use jumper cables to start the engine, follow the instructions below.

1. Shield eyes.



Battery

2. Connect one end of the jumper cable to the battery positive (+) terminal and the other to the auxiliary battery positive (+) terminal. Connect one end of the other cable first to the auxiliary battery (-) negative terminal, and the other end to the (-) negative terminal. Follow the starting procedures above after the jumper cables are connected as instructed.

Idle the engine and turn on all electrical equipment, then disconnect the cables in reverse order of the connecting procedure above. This will help protect the alternator from damage due to extreme load changes.

WARNING: BATTERIES CONTAIN SULFURIC ACID AND PRODUCE EXPLOSIVE GASES. FOLLOW THE INSTRUCTIONS BELOW TO PREVENT PERSONAL INJURY.

- Wear eye and skin protection.
- Keep sparks and flame away.
- Always have adequate ventilation while charging or using the battery.
- If ice is present or the battery is cracked, DO NOT ATTEMPT TO“JUMP START”vehicle.
- Follow the battery manufacturer’s instructions which are shown on the battery.
- Bring helper vehicle with a battery of the same voltage as disabled machine within easy cable reach.“THE VEHICLES MUST NOT TOUGH”.

ENGINE WARM-UP

In cold weather, run the engine at half throttle for a few minutes to allow engine oil and transmission oil to warm-up.

WARNING: ALWAYS APPLY THE PARKING BRAKE, WHEN LEAVING THE SEAT.

STOPPING THE ENGINE

Stopping the engine should be done according to the following procedures;

1. Push the throttle lever fully rearward.
2. Release the HST foot pedals.
3. Apply the parking brake.
4. Place the range selector and lift control levers in the“N”position.
5. Turn the key start switch to the“OFF”position.
6. Remove the key.

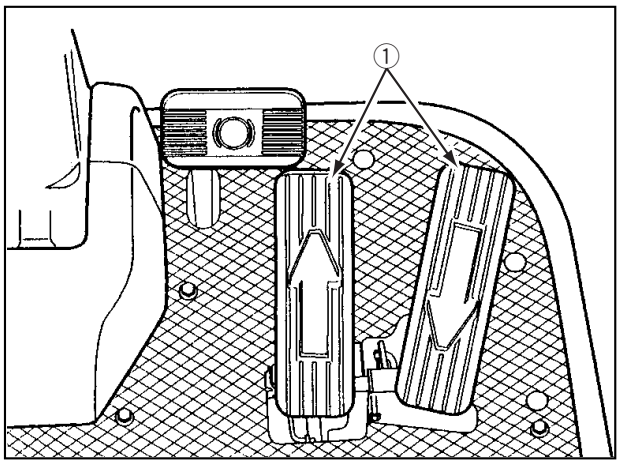
IMPORTANT: Failure to turn the key start switch to the“OFF” position, after the engine stops, will allow the warning lights to remain on, causing the battery to discharge.

IMPORTANT: Do not stop the engine immediately after hard or extended operation. Keep the engine running at slow idle for about 2 minutes to allow engine to cool down.

OPERATING THE HYDROSTATIC TRANSMISSION AND PTO

HYDROSTATIC TRANSMISSION

The hydrostatic transmission is controlled by the HST foot pedals ①, cruise control switch ②, and range selector lever ③.



When operating the range selector lever, place the HST foot pedals in the neutral position. If it is difficult to engage, slightly depress the Forward or Reverse foot pedal for smooth engagement.

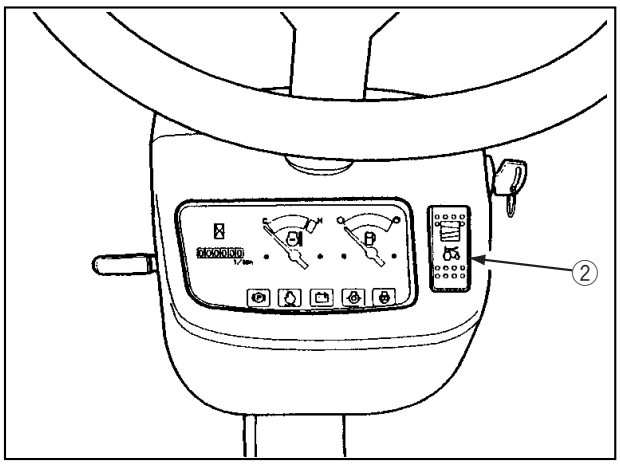
Never engage or disengage the shift lever when the unit is in motion.

With the shift lever in“H”range, ground speed can be varied from zero to maximum by depressing the forward or reverse travel pedal. In “L” range, speeds are about 60% of “H” range. Maximum speeds in reverse are about a 65% of maximum forward speeds.

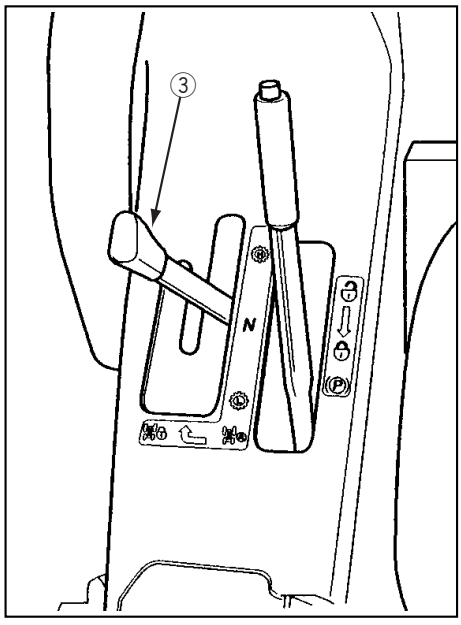
To stop the unit, release the pedal gradually (except on an emergency). When release, the pedal returns to the Neutral position automatically, stopping the unit. Sudden release can result in an abrupt, and possible dangerous stop.

For prolonged operation at a fixed forward speed, use the forward travel pedal to attain the desired speed, then move the cruise control switch to the“ON” position. Speed will remain at the set value when the pedal is released.

To cancel the speed setting or stop, push the switch to the“OFF”position.



HST FOOT PEDALS AND SPEED CONTROL LEVER
1. HST Foot Pedasl
2. Cruise Control Switch



RANGE SELECTION
3. Range Selector Lever

AUTOMATIC OR PERMANENT FOUR-WHEEL DRIVE (FWD)

The lever is used to select automatic Four-Wheel Drive or permanent Four-Wheel Drive.

Four Wheel Drive (FWD) Selector Lever is activated by the same lever as the one that activates the Range Selector Lever.

When the lever is located in the position of Range Selector Lever, the tractor will run in Automatic FWD mode.

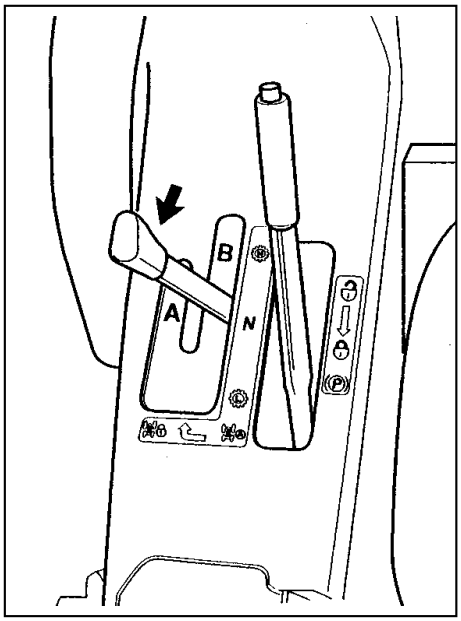
When the lever is brought to the outer slot, the tractor will run in Permanent FWD mode and low range.

When in motion, always bring the unit to a complete stop before moving the selector lever.

Automatic Four-Wheel Drive (FWD) means that the four-wheel drive line is engaged automatically when the front wheels start to slip, but, in normal mowing, reverts to 2WD, this provides sharp and smooth turn without damaging turf.

Permanent Four-Wheel Drive should be used when additional traction is required while operating in loose soil, wet, slippery conditions or slopes.

The steering (rear) axle will not drive in reverse when mower is operating in Automatic FWD.



FWD SELECTION LEVER
A. Permanent FWD
B. Auto FWD

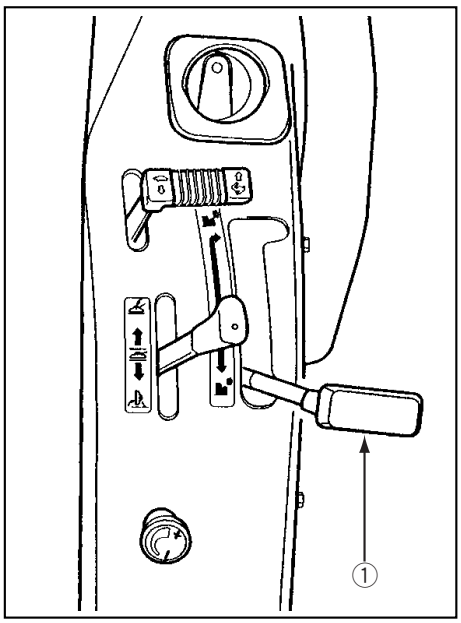
POWER TAKE-OFF OPERATION

The power take-off (PTO) transfers engine power directly to the PTO equipment.

PTO is controlled through the PTO lever ①. To engage the PTO, push the lever forward. To disengage the PTO, pull the lever rearward.

WARNING! TO AVOID PERSONAL INJURY, KEEP CHILDREN AND OTHERS AWAY WHEN OPERATING PTO EQUIPMENT.

NOTE: The PTO lever must be placed in the disengaged position to start the tractor.

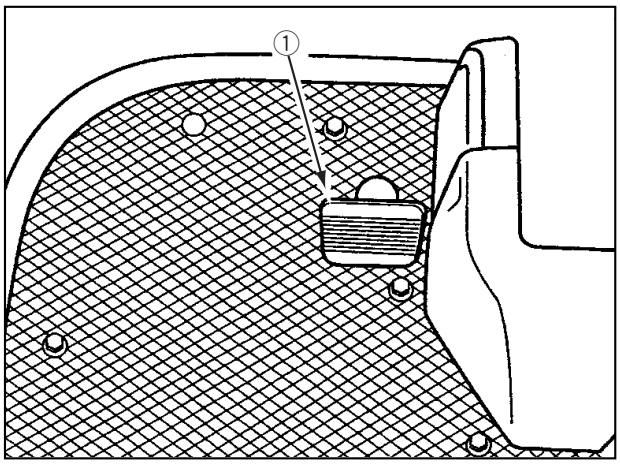


PTO ENGAGEMENT
1. PTO Control lever

OPERATING THE DIFFERENTIAL LOCK

The differential lock is engaged by depressing the pedal ①. Depressing the pedal locks both differential gears together, preventing one wheel from rotating independently of the other. The lock should be used to obtain additional traction from the opposite wheel whenever one wheel begins to slip in wet or loose soil.

Do not engage the differential lock when ground speed is above 8 kmh.



DIFFERENTIAL LOCK
1. Differential lock pedal

WARNING: DO NOT ENGAGE THE DIFFERENTIAL LOCK WHEN TURNING THE UNIT. IF THE LOCK IS ENGAGED WHEN TURNING, A LOSS OF STEERING CONTROL WILL RESULT.

To operate the differential lock depress and hold down the pedal until the lock is positively engaged. It is best to engage the differential lock while the wheels are turning slowly to minimize shock loads to the drive line. If a wheel spins at high speed, as on ice, reduce engine speed to idle before engaging the lock, or damage may occur. The differential lock is released when the pedal releases as the loads equalise on both drive wheels.

NOTE: In some instances the lock may remain engaged after the pedal is released. This may occur if one front wheel tends to turn at a faster speed than the other. Should this happen, the lock may be disengaged by either of two ways:

- Decrease the drawbar pull by raising or disengaging the implement so that neither wheel tends to slip.

— OR —

- Rapidly apply and release a light braking load to the slipping front wheel.

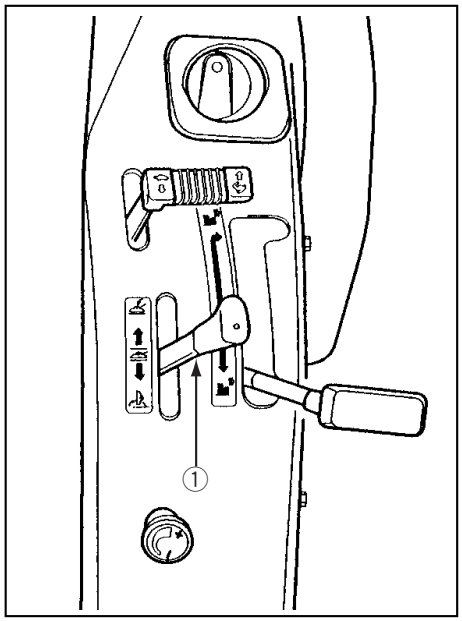
OPERATING THE HYDRAULIC LIFT SYSTEM

The hydraulic lift system provides accurate, smooth, and instant hydraulic power for raising front mounted equipment whenever the engine is running.

To raise the front mounted equipment, pull the lift control lever ① rearward and hold it until the desired equipment height is reached.

To lower the equipment, push the lever forward. When pushed all the way forward, the lever will remain in a lowered float detent position.

IMPORTANT: Always set the lift control lever in the float detent position when mowing.



HYDRAULIC LIFT CONTROL
1. Lift control lever

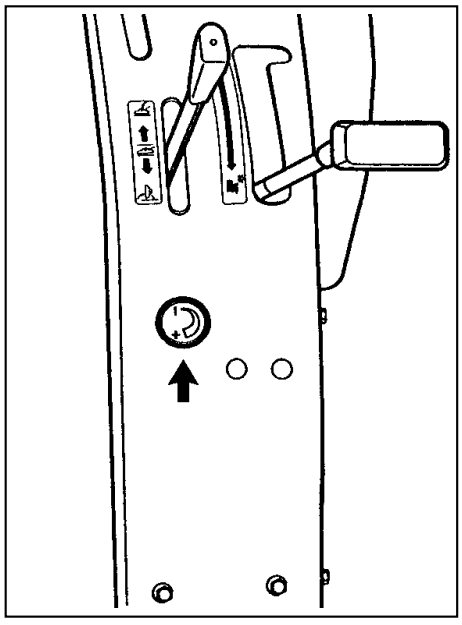
WARNING: MAKE SURE THE AREA IS CLEAR OF PEOPLE BEFORE RAISING OR LOWERING EQUIPMENT.

WARNING: ALWAYS LOWER THE HYDRAULIC LIFT AND EQUIPMENT BEFORE STOPPING THE UNIT.

NOTE: Set the Lift Control Lever to RAISE position, and the PTO will be disengaged automatically.

WEIGHT TRANSFER VALVE

The valve is used to transfer the mower deck weight to the tractor unit to reduce equipment weight on turf and prevent damage and improve traction.



Weight Transfer Valve Knob

The weight transfer valve should be used according to the following procedures;

1. With the engine running, push the hydraulic lift lever forward to the floating position.

2. Turn the adjusting knob clockwise until the mower or other equipment lifts off the ground.

3. Turn the adjusting knob counter-clockwise slowly until the mower deck front gauge wheels or other equipment just touches the ground, then turn the knob counter-clockwise 1/4 turn more.

4. Operate, the unit, over uneven terrain at desired travel speed and observe the mower deck's front gauge wheels. If the wheels or equipment do not follow ground contour, the operation will be affected.

5. To correct this condition, turn the knob 1/4 turn clockwise at a time until the mower deck's front gauge wheels follow the ground contour.

AUXILIARY VALVE (OPTIONAL)

The Auxiliary Valve is available from your SHIBAURA Dealer, as an option. If you use the Auxiliary Valve, keep the lift control lever in neutral.

OPERATION SHUT-OFF DEVICES

The CM Mower is equipped with two operation shut-off devices. One is the engine stop system and the other one is the PTO stop system.

ENGINE STOP SYSTEM: Raising off the seat, the engine will stop whenever operating PTO driven equipment such as the mower deck. Also the engine will stop when raising off the seat unless the parking brake or master brake pedal is applied.

IMPORTANT: Before operating the unit always adjust the seat flotation properly in accordance with the operator's weight for correct function of the engine stop device.

PTO STOP SYSTEM: While operating PTO driven equipment such as a mower deck, the PTO will disengage automatically when the equipment is raised by the lift control lever.

NOTE: The PTO control lever remains in the engaged position after activating the PTO stop device. To re-engage the PTO, the PTO control lever must be moved to the "OFF"position, then pushed forward again.

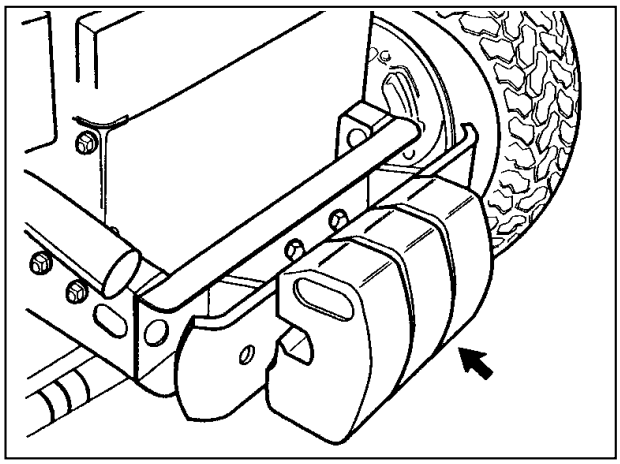
WARNING: FOR SAFE OPERATION, DO NOT ATTEMPT TO OVERRIDE OR BYPASS EITHER OF THESE SYSTEMS. IF EITHER SYSTEM FAILS TO FUNCTION, IT SHOULD BE REPAIRED BEFORE USING THE UNIT.

CM MOWER WEIGHTING (OPTIONAL)

Rear end weights are recommended to increase stability, steering, traction on slopes or slippery surfaces, and help prevent rear-end tip up.

Recommended
30kg Quantity (5) max
Optional Rear Weight Bracket needed

WARNING: IMPROPER OPERATION ON SLOPES CAN CAUSE INJURY. INSTALL REAR END WEIGHTS TO INCREASE STABILITY. USE EXTREME CARE WHEN OPERATING ON SLOPES.



WEIGHTING
Rear End Weights

DRIVING THE CM MOWER

WARNING: TO PREVENT PERSONAL INJURY, OBSERVE THE FOLLOWING PRECAUTIONS WHEN DRIVING THE UNIT.

- Watch where you are going - especially at row ends, on roads, and around the trees.
- Reduce speed before turning or applying brakes.
- Avoid sudden starts and stops on slopes.
- Be careful when changing direction on slopes.
- Stay alert for holes, rocks, roots and other hidden hazards in the terrain. Keep away from drop-offs.
- Do not park on slopes.
- Avoid quick stops especially when an attachment is not installed or raised. Quick stops will cause upsets.
- Use extreme care when operating on slopes.

OVERHEAT AND ENGINE OIL PRESSURE ALARM BUZZER

The coolant temperature fluctuates depending on ambient temperatures and working loads. If the needle at the“H”end indicates during operation, the overheat alarm buzzer sounds. This time take the following steps.

1. Set the PTO of the mower to the OFF-position.
2. Wipe the air intake panel of chaff and dirt by hand.
3. Run the engine idle until the meter needle comes back to the middle area.
4. Stop the engine and check the coolant level in the reservoir tank.
   (1) If the coolant level is lower than LOW mark, add clean water or antifreeze solution as necessary.
   (2) If there is no coolant left in the reservoir tank, remove the radiator cap and visually check the level of the coolant. If the coolant level is just below the bottom of the filler neck, add clean water or antifreeze solution as necessary.

WARNING: THE COOLING SYSTEM OPERATES UNDER PRESSURE WHICH IS CONTROLLED BY THE RADIATOR CAP. IT IS DANGEROUS TO REMOVE THE CAP WHILE THE SYSTEM IS HOT. ALWAYS COVER THE CAP WITH A THICK CLOTH AND TURN THE CAP SLOWLY COUNTERCLOCKWISE TO THE FIRST STOP. ALLOW ALL PRESSURE TO ESCAPE BEFORE REMOVING THE CAP COMPLETELY.

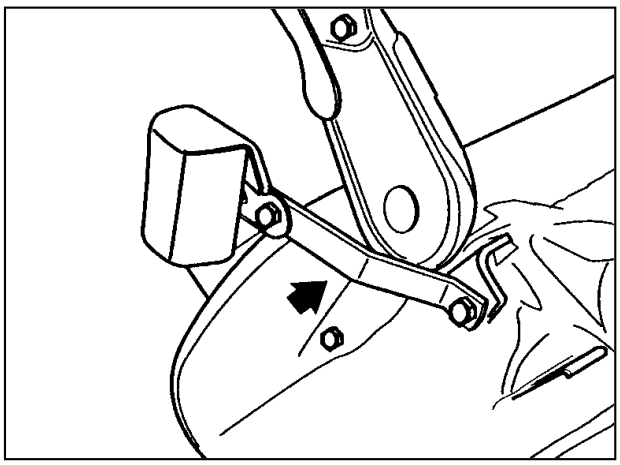
ENGINE OIL PRESSURE

When oil pressure falls below 29.4 kPa, the alarm buzzer will sound same as overheat situation above 110°C degrees.

NOTE: The alarm buzzer will sound when engine stops with key left inserted at“ON” position. In order to stop the alarm buzzer, return the key to“STOP”position.

SEAT BELT ANCHOR

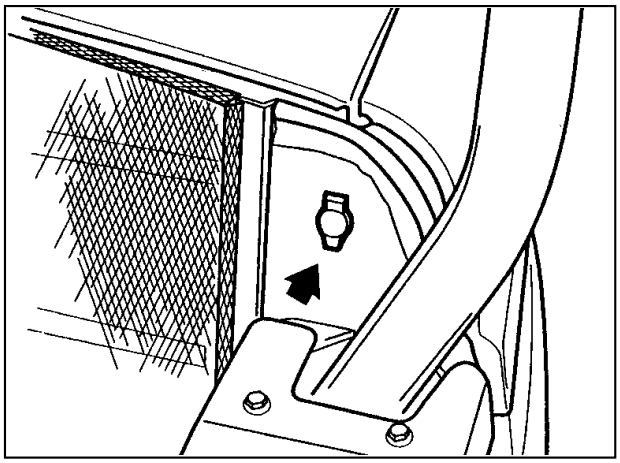
Check if there is any looseness or damage in the seat belt anchors located on both right and left sides.



CELLULAR PHONE SOCKET

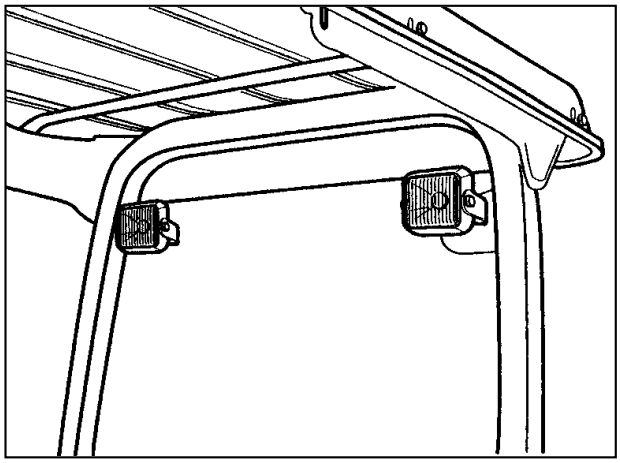
- When you need power, for example, for using the cellular phone for a long time, the power can be taken from this socket.
- A current up to 12V and 20A can be taken for other power requirements from the cellular phone outlet.

The plug and cord are provided as standard accessories and housed in the rear seat pocket.



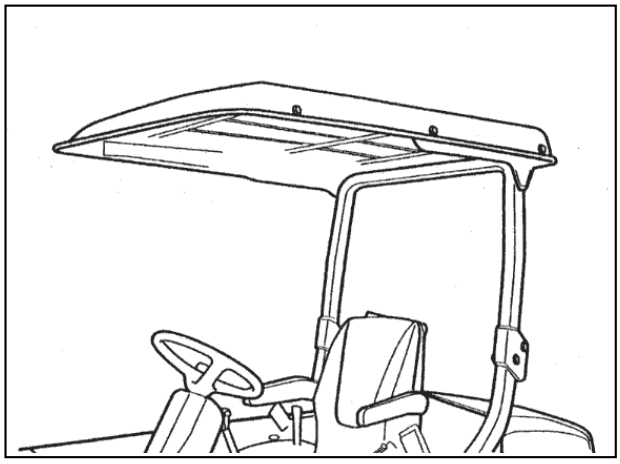
WORKING LIGHTS (OPTIONAL)

The work lights are available as a dealer installed accessory from your SHIBAURA dealer.



CANOPY (2-post ROPS) (OPTIONAL)

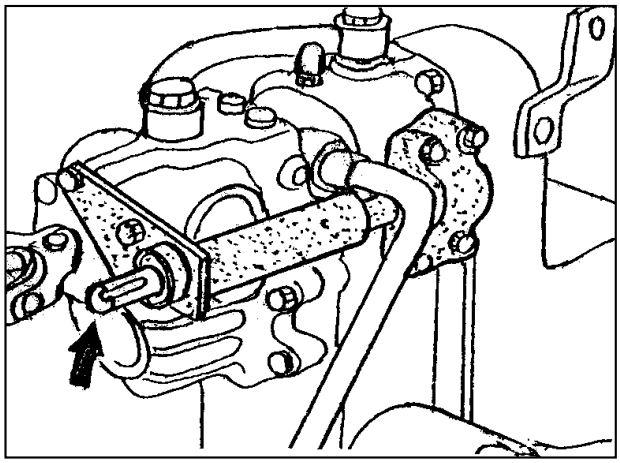
The canopy for a 2-post ROPS is available as a dealer installed accessory from your SHIBAURA dealer.



SIDE PTO (OPTIONAL)

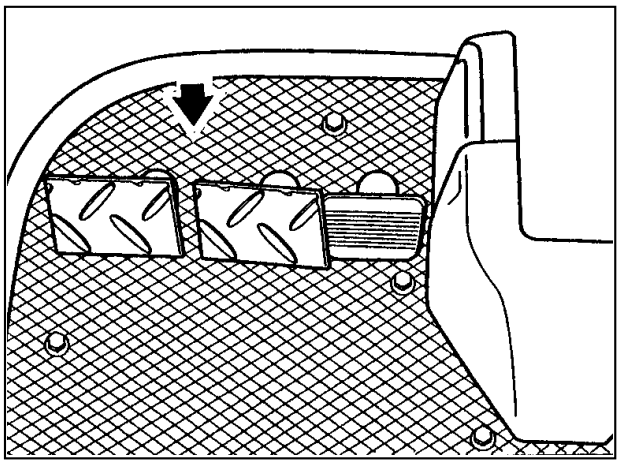
The side PTO is available as a dealer installed option From your SHIBAURA dealer.

Side PTO is used to power optional grass catcher blower..



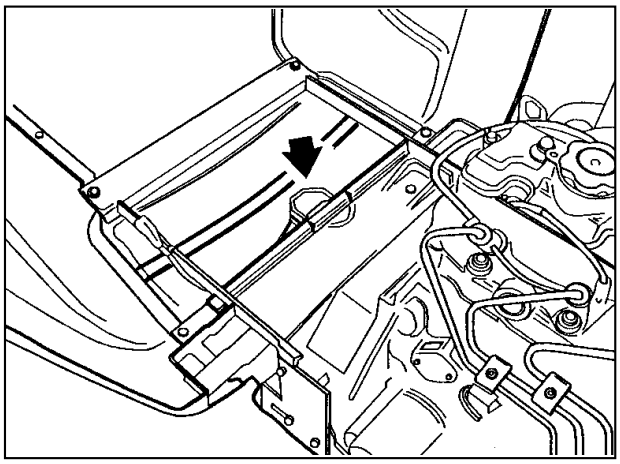
Dual Pedal Turning Brakes Kit (OPTIONAL)

The dual pedal turning brakes kit is available as a dealer installed Option from your SHIBAURA dealer.



AUDIBLE BACKUP ALARM (OPTIONAL)

The audible backup alarm is available as a dealer installed option from your SHIBAURA dealer.



SECTION 3
LUBRICATION AND MAINTENANCE

This section gives full details of the service procedures necessary to maintain your CM Mower at peak efficiency while the lubrication and maintenance charts provide ready reference to these requirements.

NOTE: Ensure that the unit is on level ground and that all hydraulic rams are extended, where applicabel before checking oil levels.

To prevent contamination when changing oils or filters etc., always clean the area around the filler, level and drain plugs, dipsticks and filters. Ensure that oil contained within remote cylinders is clean, has not broken down due to long storage and is of the correct grade.

After the first 50 hours of operation of your CM mower the following maintenance is required:

50-HOUR SERVICE

INOPERATIVE SERVICE CHECKS

1. Tire pressure
2. Check air cleaner hose connection
3. Replace diesel fuel filter(s)
4. Tighten injector line fittings
5. Radiator coolant level
6. Fan belt tension
7. Battery cleanliness and vent openings, electrolyte level and charge
8. All electrical cables, terminals and wires
9. Drain and refill engine oil
10. Replace engine oil filter
11. Transmission and front axle oil level
12. Rear axle oil level
13. Replace HST oil filter
14. Replace hydraulic system oil filter
15. ROPS and seat belt

OPERATIVE SERVICE CHECKS

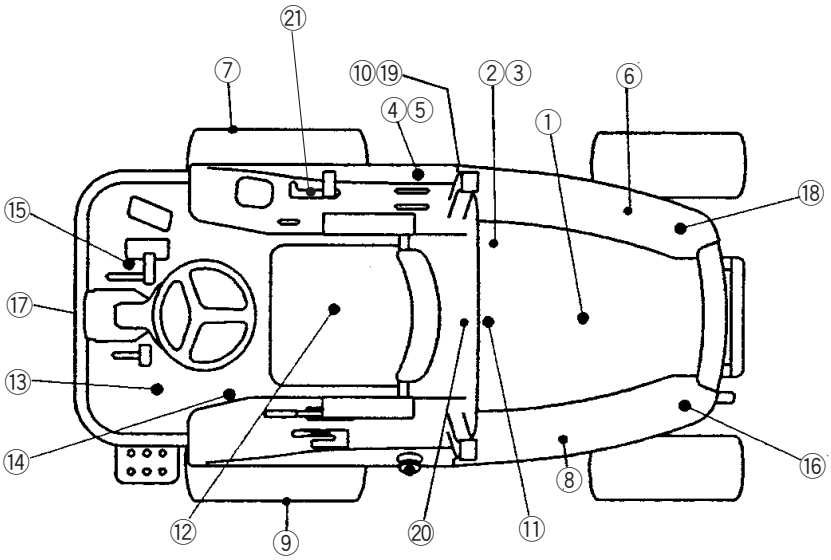
1. Lights and Instruments for proper operation, and fuel shut down with key switch off
2. Fluid and oil leaks
3. Maximum no-load speed and idle speed adjustments
4. Starting and starter switches
5. Hydraulic system:
   ・Lift control lever operation
6. Operation of safety devices:
   ・PTO disengagement system
   ・Engine stop system

PERFORMANCE SERVICE CHECKS

1. Engine operation including throttle and governor operation
2. HST transmission
3. Steering control
4. Differential lock engagement and disengagement
5. Brake action
6. All optional equipment and accessories

PROPERLY MAINTAINED EQUPMENT
IS SAFE EQUIPMENT

LUBRICATION AND MAINTENANCE CHART



No.	LUBRICATION & MAINTENANCE ITEMS	CHECK	CLEAN	LUBE	CHANGE	ADJUST	SERVICE INTER-VALS
1	Engine Oil Level	×					Every 10 Hours or Daily
2	Air Cleaner	×					
3	Radiator Coolant	×					
20	Radiator screen		×				
4	Hydraulic Filter				×		First 50 Hours
5	H.S.T. Filter				×		
1,6	Engine Oil & Filter				×		
7	Tire Pressure	×					
8	Fuel Filter				×		
9	Wheel Bolt Torque	×					
—	All Fluid Levels	×					
7	Tires Pressure	×					Every 50 Hours
10	Battery	×					
8	Fuel Filter	D	R	A	I	N	
11	Fan Belt	×					
12	Transmission Oil	×					
	Lubrication Fittings:						
13	Lift arm			×			
14	Lift cylinder			×			
15	Brake Pedal Shaft			×			
16	Power Steering Cylinder			×			
17	Dif. Lock Pedal Shaft			×			

No.	LUBRICATION & MAINTENANCE ITEMS	CHECK	CLEAN	LUBE	CHANGE	ADJUST	SERVICE INTER-VALS
1,6	Engine Oil & filter				×		Every 100 Hours
2	Air Cleaner Element		×				
8	Fuel Filter		×				
18	Rear Axle 4WD Oil	×					
21	PTO Control Lever					×	
19	Fuel Filter Element				×		Every 200 Hours
11	Fan Belt					×	
9	Wheel Bolt Torque	×					
4	Hydraulic Filter				×		Every 300 Hours
5	H.S.T. Filter				×		
12	Transmission Oil				×		Every 600 Hours
18	Rear Axle 4WD Oil				×		
2	Air Cleaner Element				×		Seasonal
3	Radiator Coolant				×		
2	Safety Air Filter Element				×		Every 3rd Primary Element Change or Every 1000 Hours, Whichever Comes First

LUBRICATION

Adequate lubrication and maintenance on a regular schedule is vital to maintaining your CM mower. To ensure long service and efficient operation, follow the lubrication and maintenance schedules outlined in this section. The use of proper fuels, oils, and filters, as well as keeping the systems clean, will also extend machine and component life.

ATTENTION: Always use genuine SHIBAURA replacement filters to ensure proper filtration of engine and hydraulic systems.

RECOMMENDED LUBRICANTS

Engine Oil..... Service Grade CD

Ambient Temp (℃)	Recommended Oil
+5°-50°	SAE 30W
-15°-50°	SAE 15W-40
-25°-50°	SAE 10W-30
-30°-15°	SAE 5W-30
NOTE: CM Mower are originally shipped with 10W-30 oil.	

Transmission Oil.....ISO VG 46

Grease.....High Viscosity Lithium Base-NLG 1 # 2

LUBRICATION FITTINGS

NOTE: After every 50 hours of normal operation, apply a good quality grease to the lubrication points listed below (refer to the Recommended Lubricants chart). When operating under extremely dirty conditions, lubricate more frequently than every 50 hours.

- Lift cylinder
- Front Lift arm
- Power Steering Cylinder
- Brake pedal shaft
- Dif. Lock pedal shaft

To lubricate these points:

1. Wipe away all old grease and dirt from the lubrication fittings to prevent dirt or foreign material from entering as new grease is applied.
2. Use a high pressure grease gun to force in the new grease. Apply pressure until clean grease oozes from each lubrication point.
3. Wipe away any excess grease.

DIESEL FUEL

- Use clean, quality No. 1-D or No. 2-D fuel
- Use No. 1-D fuel if the ambient temperature is expected to be lower than 4°C or if the loader is to be used at an altitude exceeding 1524 m.
- Use No. 1-2 diesel fuel with a pour point of at least -12°C below the expected ambient temperature to prevent fuel flow problems in cold weather.
- Keep dirt from entering the fuel tank.
- Sulfur content of the fuel should be no more than 0.5%.
- Sediment and water content should not exceed 0.05%.
- Minimum cetane number is 40. Low temperature or high altitude operation may require use of fuel with a higher octane number.
- Use properly mixed winter fuel when temperatures are extremely cold. In most areas, diesel fuel is properly blended for summer and winter grades as ambient temperatures change. In winter, use winter grade diesel fuel only. Otherwise, the fuel may cloud and block the fuel system.

Fuel Usage Safety

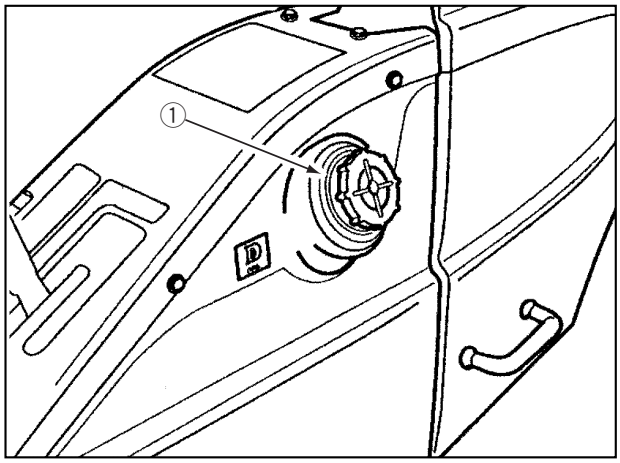
- UNDER NO CIRCUMSTANCES should gasoline, alcohol, or gasohol be added to diesel fuel. These combinations can create an increased fire or explosive hazard.
- Never remove the fuel cap or refuel the tractor while the engine is running or hot.
- Never smoke while refueling or anywhere near fuel.
- When filling the tank, maintain control of the nozzle.
- Do not fill the fuel tank to capacity. Allow room for expansion.
- Wipe up spills immediately.
- Always tighten the fuel cap securely.
- If the original fuel tank cap is lost, always replace it with a SHIBAURA approved cap. A“will-fit”cap may not be safe.
- Keep equipment properly maintained.
- Do not drive equipment near open fires.
- Never use gasoline for cleaning parts.

WARNING: FUEL OIL IN THE INJECTION SYSTEM IS UNDER HIGH PRESSURE AND CAN PENETRATE THE SKIN. UNQUALIFIED PERSONS SHOULD NOT REMOVE OR ATTEMPT TO ADJUST A PUMP INJECTOR, NOZZLE, OR ANY PART OF THE FUEL INJECTION SYSTEM.

- **DO NOT USE YOUR HAND TO CHECK FOR LEAKS. USE A PIECE OF CARDBOARD OR PAPER TO SEARCH FOR LEAKS.**
- **IF ANY FLUID IS INJECTED INTO THE SKIN, OBTAIN MEDICAL ATTENTION IMMEDIATELY OR GANGRENE MAY RESULT.**

FAILURE TO FOLLOW THESE INSTRUCTION CAN RESULT IN SERIOUS INJURY.

Refueling the Tractor



The fuel tank filler cap ① is located at the left side of the tractor hood. Before removing the cap, wipe all dust and dirt from around the cap to prevent debris from falling into the tank while filling.

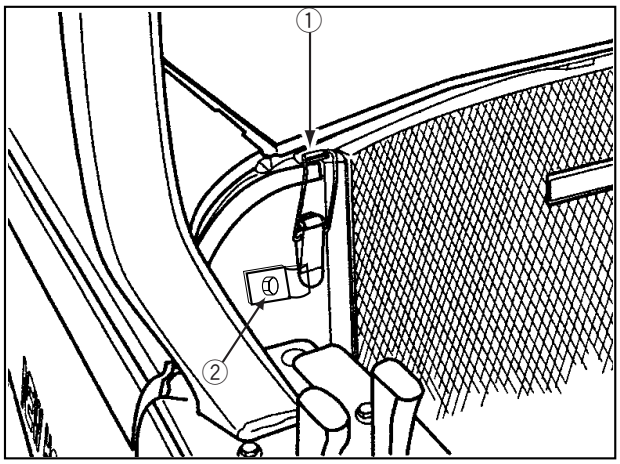
Use an approved fuel container and check the inside of the container periodically for cleanliness. Fuel tank capacity is 50.5L.

NOTE: The fuel cap is a vented-type. Use only an approved SHIBAURA replacement cap to prevent fuel system-related problems.

If there is no filter on the storage tank or fuel container, filter the fuel through a 100-mesh or finer screen when filling the mower fuel tank. Keep the mower tank as full as possible (without filling to capacity) to minimize condensation.

NOTE: It is a good practice to fill the fuel tank at the end of each day, as this will reduce overnight condensation.

SERVICE ACCESS



OPENING HOOD

Loosen the Bolt ② by tool, allowing to unlock the hood latch ① and raise the hood holding the hood handle.
Close the hood and tighten the Bolt ② by tool, allowing to lock the hood latch after lubrication and maintenance.

CAUTION: TO AVOID PERSONAL INJURY FROM CONTACT WITH MOVING PARTS;

- **NEVER OPEN THE HOOD AND SEAT WHILE THE ENGINE IS RUNNING.**

- **DO NOT TOUCH MUFFLER OR EXHAUST PIPER WHILE THEY ARE HOT; SEVERE BURNS COULD RESULT.**

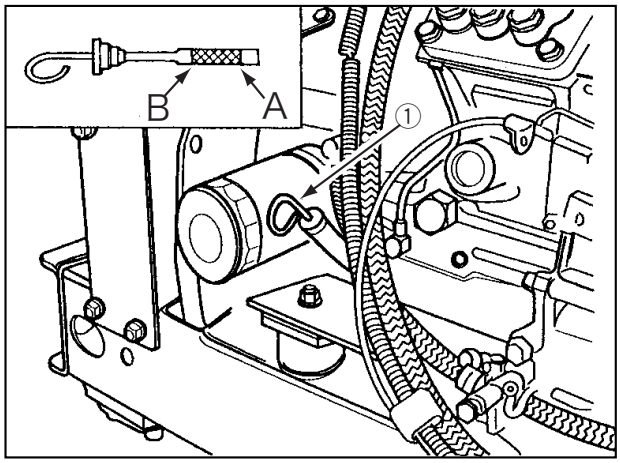
FUEL AND LUBRICANT SERVICE PROCEDURES

ENGINE

Checking the Engine Oil Level

NOTE: Check the engine oil level daily or after every 10 hours of operation.

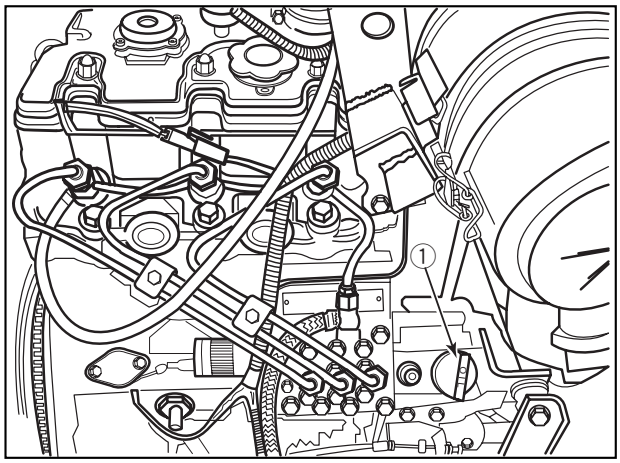
1. After the engine has been stopped for a period of time and with the Mower standing level, check the oil level using the dipstick ①.



ENGINE OIL LEVEL DIPSTICK AND FILTER
1. Dipstick
A. Low Mark (Top up)
B. Full Mark

2. If the oil level is low, remove the filler cap ①, and add oil through the filler hole, Add enough oil so that he level registers between the two marks on the dipstick. Do not overfill.

3. Install the oil filler cap.



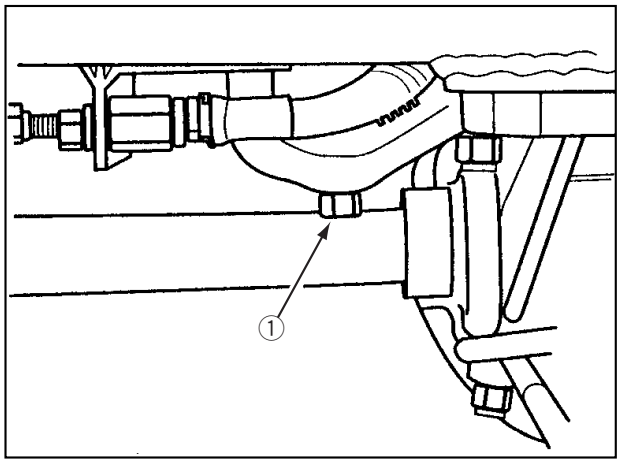
ENGINE OIL FILLER CAP
1. Filler Cap

Changing the Engine Oil

NOTE: Change the engine oil and filter after the first 50 hours of operation, then every 100 hours thereafter. If theCM mower is operated for extended periods of time at maximum rated power and speed, or under other types of continuous, severe operating conditions, the engine oil and filter should be changed at 70-hour intervals following the initial oil change.

To change the engine oil:

1. Place a suitable container beneath the drain opening to catch the used oil. With the CM mower engine off but at normal operating temperature, Remove the drain plug ①. Reinstall the plug after all the oil has been drained.

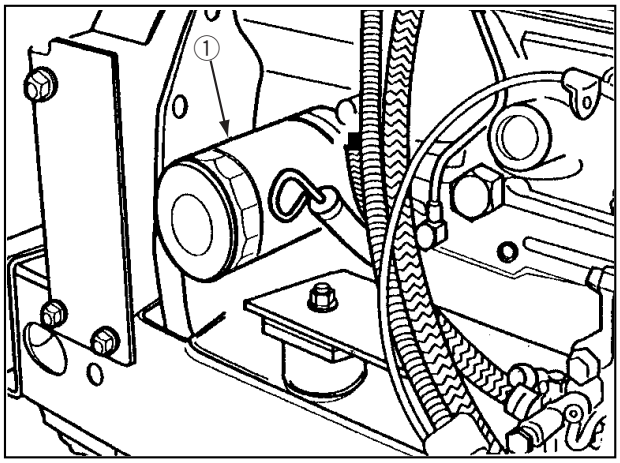


ENGINE OIL DRAIN
1. Drain Plug

2. Next, place a container below the oil filter ① to catch the used oil and unscrew the oil filter. Discard the used oil and filter.

3. Coat the gasket on the new filter with a film of clean oil. Screw the filter into place until the gasket contacts its mating surface, then turn the filter approximately three-quarters of a turn by hand Don not overtighten.

4. Add the proper type and level of new oil, then start the engine and check the filter for leaks.



ENGINE OIL FILTER

Recommended Oils

Ambient Temp (℃)	Recommended Oil
+5°-50°	SAE 30W
-15°-50°	SAE 15W-40
-25°-50°	SAE 10W-30
-30°-15°	SAE 5W-30
NOTE: CM Mower are originally shipped with 10W-30 oil.	

FUEL FILTER

Draining the Fuel Filter

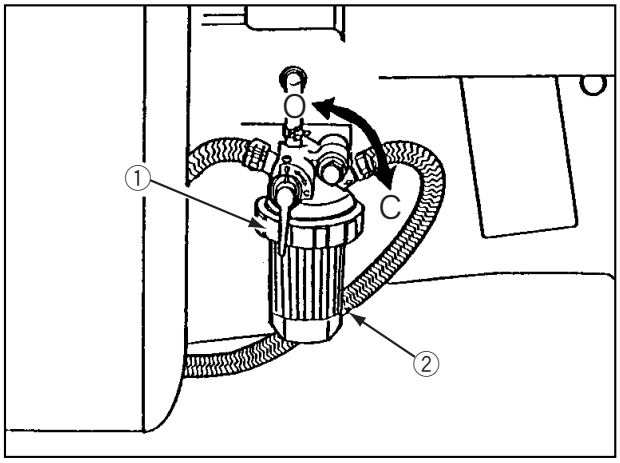
NOTE: The fuel filter should be drained after every 100 hours of operation.

1. Make sure there is adequate fuel in the fuel tank and close the fuel shutoff valve ① (the handle should be pointing to the“C”position.) Remove the fuel sediment bowl ②.

2. Open the fuel shutoff valve until all water has been removed and only fuel flows from the filter base.

3. Install the fuel sediment bowel. The Fuel system is auto bleeding And does not require any manual bleeding procedures.

NOTE: Valve is shown in open position.

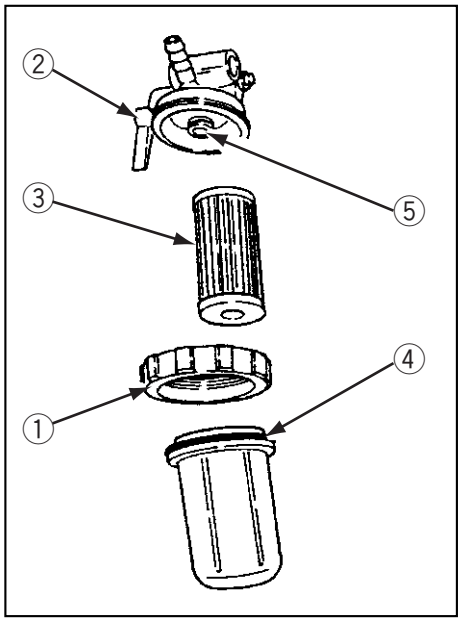


FUEL FILTER
1. Shut-off Valve
2. Sediment Bowl
O: Open C: Closed

Changing the Fuel Filter:

NOTE: Change the diesel fuel filter after the first 50 hours of operation, then following every 200 operating hours thereafter.

1. Close the shutoff valve (the handle should be pointing to the“C”position),
2. Remove the sediment bowl by rotating the retaining nut ①.
3. Open the fuel shutoff valve ②, to drain any remaining water from the tank.
4. Discard the oil element ③, and install a new element.
5. Inspect the O rings ④ and ⑤ and replace if necessary.
6. Install and securely tighten the sediment bowl.
7. Open the fuel shutoff valve (the handle should be pointing to the“O”position), ②, so fuel will flow to the filter.
8. Bleed the fuel filter and injection pump as described below in“Bleeding the Fuel System.”



BLEEDING THE FUEL SYSTEM

The CM Mower fuel system is designed to bleed automatically.

1. When the fuel tank is empty

Fill until the fuel level of the tank is at least half full, then wait about one minute for air to dissipate.

2. When the fuel filter has been replaced:
After replacing the filter, open the fuel shutoff valve. Air will dissipate for about one minute

NOTE: Fuel tank fuel level must be half full or more for auto bleed system to function correctly.

NOTE: The CM mower has auto bleeding system. No manual bleeding procedures needed.

WARNING: FUEL OIL IN THE INJECTION SYSTEM IS UNDER HIGH PRESSURE AND CAN PENETRATE THE SKIN.

UNQUALIFIED PERSONS SHOULD NOT REMOVE OR ATTEMPT TO ADJUST A PUMP INJECTOR, NOZZLE OR ANY PART OF THE FUEL INJECTION SYSTEM.

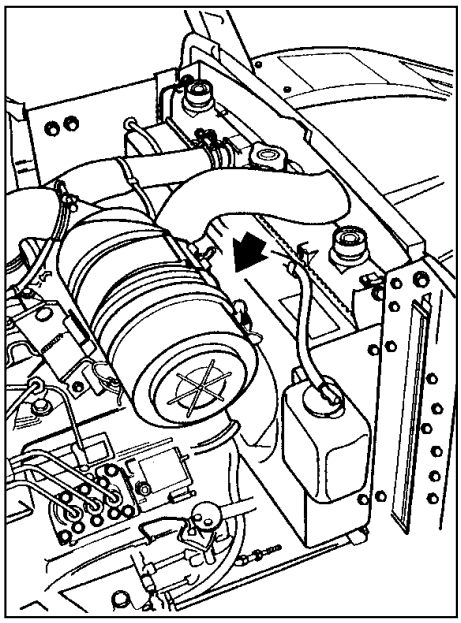
DO NOT USE YOU HAND TO CHECK FOR LEAKS. USE A PIECE OF CARDBOARD OR PAPER TO SEARCH FOR LEAKS.

IF ANY FLUID IS INJECTED INTO THE SKIN, OBTAIN MEDICAL ATTENTION IMMEDIATELY OR GANGRENE MAY RESULT.

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS INJURY.

NEVER FAIL TO CHECK THE FUEL LINE PERIODICALLY. THE FUEL LINE IS SUBJECT TO WEAR AND AGING, FUEL MAY LEAK ONTO THE RUNNING ENGINE, CAUSING A FIRE.

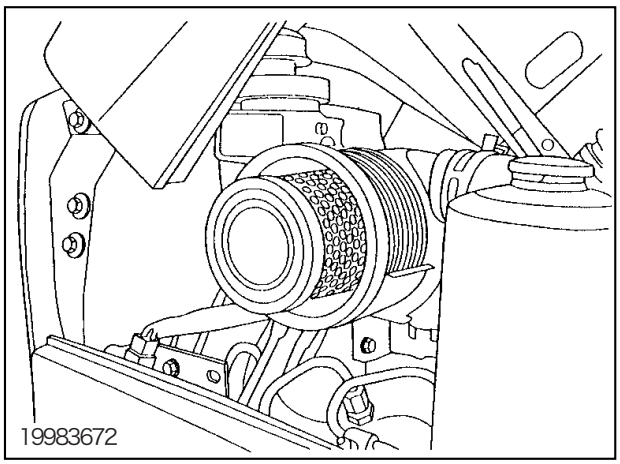
AIR CLEANER



The air cleaner is accessed by opening the tractor hood.

The air cleaner assembly contains two elements: an outer primary element and an inner safety element.

To remove the primary element, loosen the spring clamps and remove the end cap from the air cleaner body to expose the primary element.



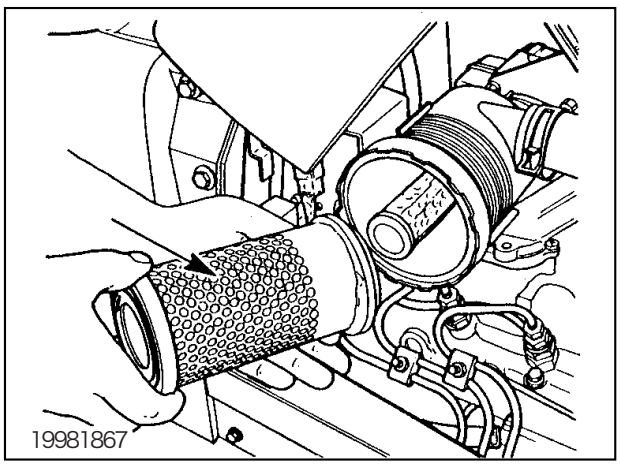
Air Cleaner Primary Element

NOTE: Clean the primary element after every 100 hours of service. Extremely dusty conditions may require more frequent service intervals.

1. Pull the primary element from the canister. Clean any loose dirt from the canister and inspect the end of the canister for dirt which may prevent the new element from sealing properly.

2. Clean the primary element using low air pressure (207 kPa or less). Blow dust from the inside to the outside of the element (opposite to normal air flow through element).

IMPORTANT: Be careful not to rupture the filter element. Maintain a safe distance between the air nozzle and the filter element when directing air up and down the clean air side of the element pleats.



3. After cleaning the element, check the inner diameter seals for damage. If damage is present, replace the primary element. Change the element after six cleanings or once a year.

4. Reinstall the primary element by inserting it into the canister and pushing on the end of the element until it is seated against the canister.

   NOTE: Place a light inside the element to check for paper leaks or for bonding of the paper to the end plate. If any leaks are found, replace the element.

   NOTE: If element is not inserted far enough into canister, the end cap cannot be installed.

5. Place the end cap onto the canister body and attach spring clamps. Make sure the end cap is locked in place and not loose.

   IMPORTANT: Never tap the element with hard objects or against a hard surface. This may dent or break the element end cap seals.

   ATTENTION: Failure to obtain a good seal between elements and the canister may cause major engine damage.

Air Cleaner Inner Safety Element

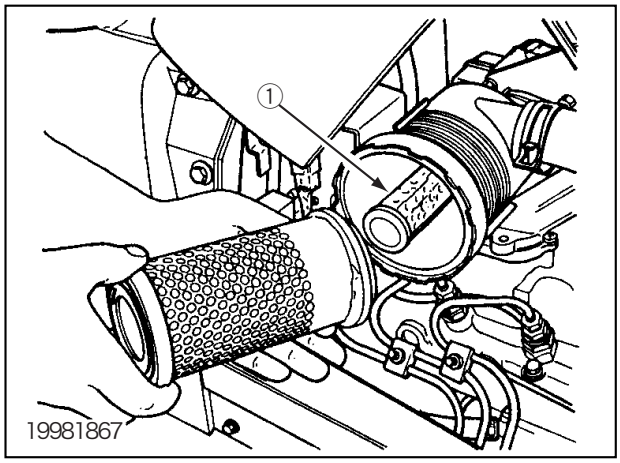
NOTE: for maximum engine protection and air cleaner service life, install a new inner safety element every third primary element change or after every 1000 hours of operation, whichever comes first.

The air cleaner inner safety element ① cannot be cleaned. It must be replaced once it becomes partially clogged. A clogged element will cause an air restriction resulting in a loss of engine power or excessive black exhaust smoke.

NOTE: Conduct a visual inspection of the inner safety element by placing a light inside the element. Little or no light will shine through the element if it is partially clogged.

To remove the inner safety element, pull it out of the canister body.

To install the new element, push it into the canister until seated.

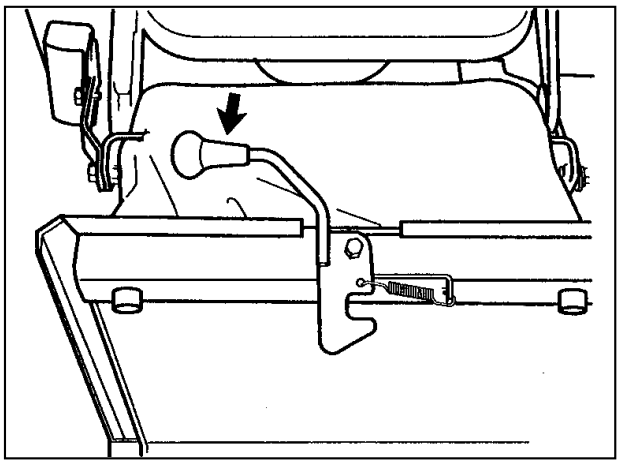


IMPORTANT: Clean any dirt from the canister before installing the inner safety element. Check element inner diameter seals for damage and replace the safety element if seal damage is present.

ATTENTION: Failure to obtain a good seal between the filter and canister may cause major engine damage.

LIFTING SEAT

By holding the grip of the tilting seat locking lever on the lower part at the back of the seat and lifting it up, the lock is released and the seat can be pull down frontward while holding the grip.



TILTING SEAT LOCKING LEVER

IMPORTANT: Before operating, after lubrication and maintenance, the hood must be closed and locked.

TRANSMISSION, FRONT AXLE AND HYDRAULIC SYSTEM

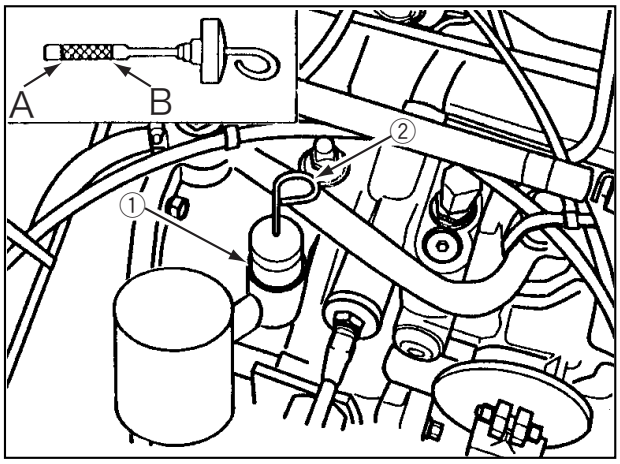
Checking Oil Level: Check the oil level every 50 hours.

1. With the Tractor standing level and the engine off, check the oil level with the dipstick.

2. The oil is at the correct level when the oil level is within the mark at the lower end of the dipstick. If low, add ISO VG46 hydraulic oil, through the filler hole. Do not fill beyond the mark on the stick, as the transmission will be overfilled.

3. Install the dipstick.

Changing Oil: Change the oil every 600 hours.



TRANSMISSION, FRONT AXLE AND HYUDRAULIC OIL
1. Filler hole
2. Dipstick
A. Low Mark (TOP UP)
B. Full Mark

1. With the oil at normal operating temperature (Caution“Hot”oil!), drain and discard the oil by removing the transmission drain plug. Reinstall the plug after the oil has drained.

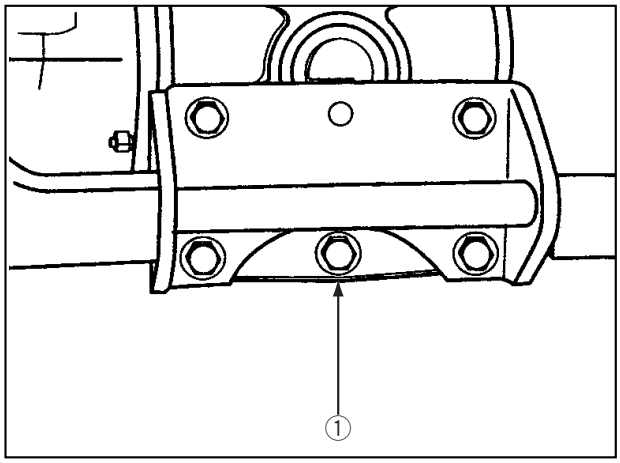
2. Check the oil and if necessary replace the hydraulic oil filter.

3. Remove the filler plug, and fill with ISO VG46 hydraulic oil.

4. The transmission is filled to the correct level when the oil level is within the mark at the lower end of the dipstick. Do not fill beyond the mark on the stick, as the transmission will be overfilled.

5. Install the dipstick and filler plug.

IMPORTANT: The transmission, front axle and hydraulic system operate from a common oil sump. Special attention must be given to keeping oil clean.



TRANSMISSION, FRONT AXLE AND HYDRAULIC SYSTEM OIL DRAIN
1. Plug

HYDRAULIC OIL FILTER (SUCTION & HST)

The hydraulic system is equipped with spin-on type oil filters.

NOTE: Replace the filters after the first 50 hours of operation and every 300 hours thereafter following the procedure below:

1. Remove the drain plug ① of the front gear case and discharge the HST oil.

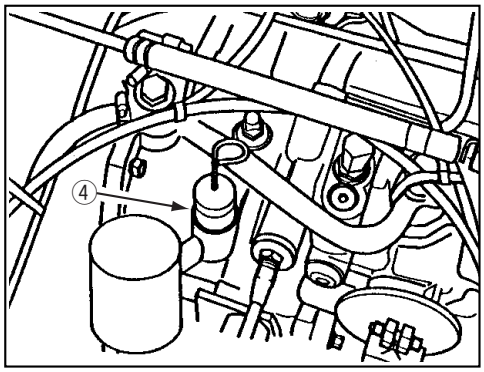
2. Unscrew the oil filter ②, ③ and discard.

3. Coat the gasket on the new filter with a film of oil. Screw the filter into place until the gasket contacts the sealing surface, then tighten the filter approximately 3/4 of a turn by hand. Do not over tighten.

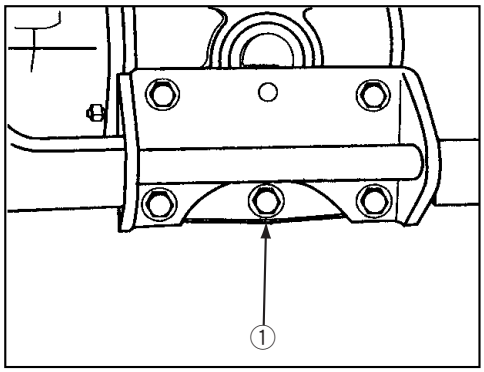
4. Install the oil filter in place and supply new HST oil from the oil inlet ④.

5. Start the engine and check the hydraulic oil filter for leaks.

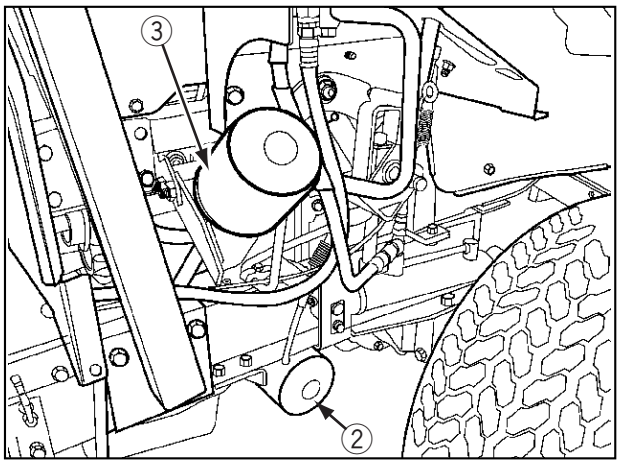
6. Stop the engine and check the hydraulic oil level. Replenish if necessary.



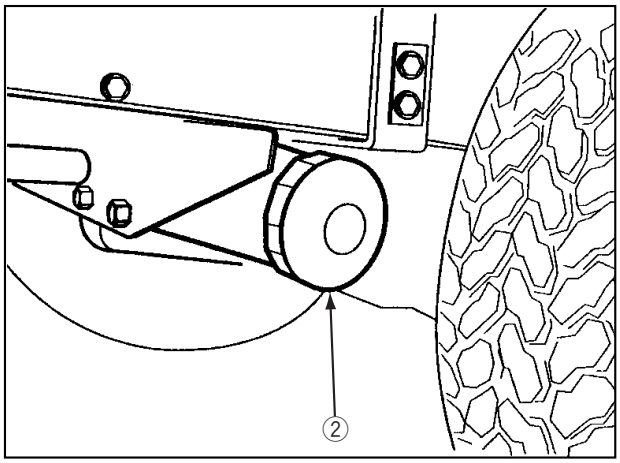
TRANSMISSION, FRONT AXLE AND HYDRAULIC OIL



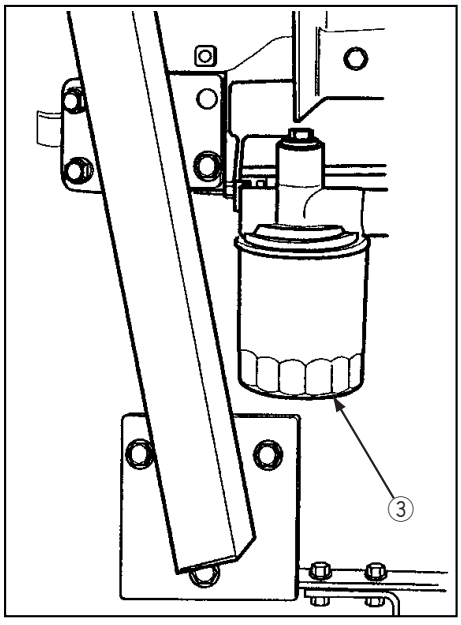
TRANSMISSION, FRONT AXLE AND HYDRAULIC SYSTEM OIL DRAIN



HYDRAULIC OIL FILTER
2. Hydraulic Oil Filter
3. HST Oil Filter



HYDRAULIC OIL FILTER



HST OIL FILTER

REAR AXLE DIFFERENTIAL CASE AND FINAL REDUCTION GEAR CASES

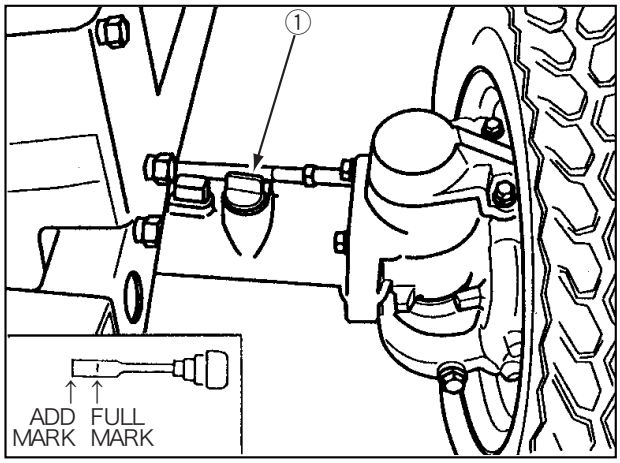
Checking Oil Level: Check the oil level every 100 hours.

1. With the engine off and the tractor standing level, check the oil level using the combined dipstick/filler plug ①. The oil is at the correct level when it reads between the two marks on the dipstick.

NOTE: place the dipstick/filler plug ① horizontally over the oil inlet and measure the oil level. Do not screw dipstick into housing when Checking oil level.

2. If the level is low, add ISO VG46 hydraulic oil through the filler hole. Do not fill above the dipstick full mark.

3. Reinstall the dipstick/filler plug ①.



REAR AXLE DIFFERENTIAL LUBRICATION
1. Level / Filler Plug

Changing Oil: Change the oil every 600 hours.

1. With the oil at normal operating temperature, drain the oil by removing the rear axle differential ① and final reduction gear case drain plugs ②. Reinstall the plugs after the oil has drained. Discard the oil.

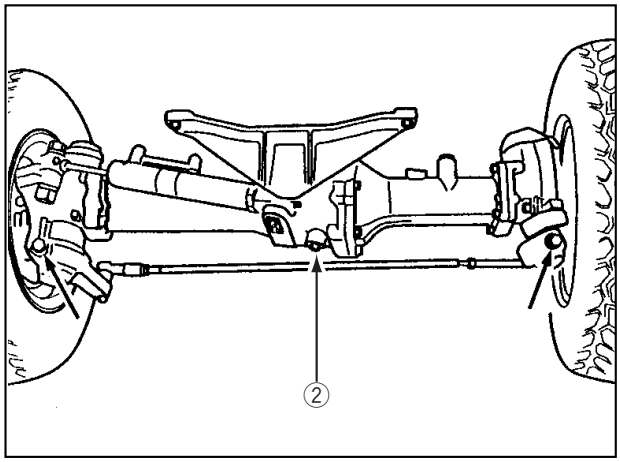
2. Supply new ISO VG46 hydraulic oil into the fill hole ①.

NOTE: By this method, it takes much time until the oil is spread fully into the final reduction gear case. The oil can be supplied by the following method also.

1. Remove the right and left rear wheels.

2. Oil supply plugs are located on the front side of the right and left final reduction gear case. Remove the plugs.

3. By supplying the hydraulic oil from the plug holes, the final reduction gear case can be filled more quickly, reducing the oil supply time.



REAR AXLE DIFFERENTIAL / FINAL REDUTION LUBRICATION DRAIN PLUG
2. Drain Plug

GENERAL MAINTENANCE

COOLING SYSTEM

The CM mower engine must operate at the correct temperature to obtain maximum efficiency and service life. This is dependent on the cooling system.

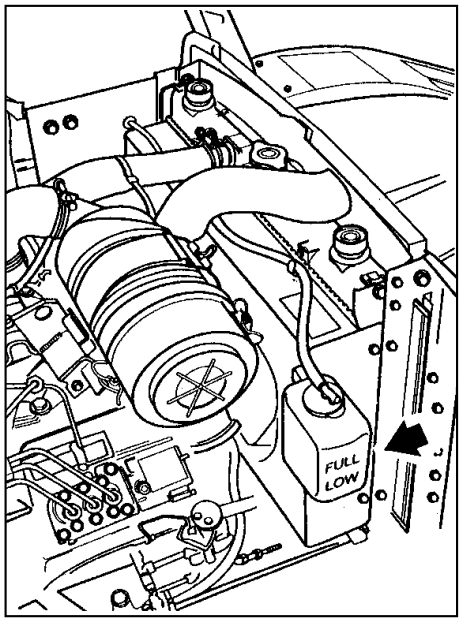
Always fill the system with a 50/50 solution of permanent antifreeze and clear water.

Checking the Coolant Level

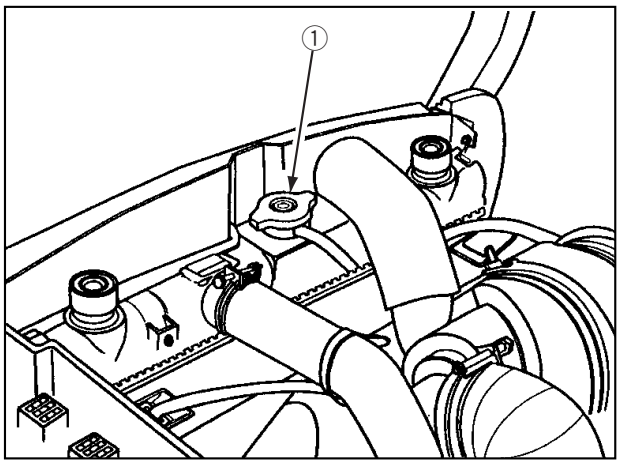
NOTE: Check the coolant level daily or after every 10 hours of operation. The engine should be cold when coolant level is checked.

Open the hood, and check the coolant recovery reservoir located next to the battery. The fluid should be between the low and the full marks on the reservoir.

If the coolant recovery reservoir is empty, remove the radiator cap ① and add a 50/50 solution of water and antifreeze until the radiator is full. Then add the water antifreeze solution to the coolant recovery reservoir until it is to the full level.



COOLANT RESERVOIR



COOLANT SYSTEM
1. Radiator Cap

WARNING: THE COOLING SYSTEM OPERATES UNDER PRESSURE CONTROLLED BY THE RADIATOR CAP. IT IS DANGEROUS TO REMOVE THE CAP WHILE THE SYSTEM IS HOT. ALWAYS COVER THE CAP WITH A THICK CLOTH AND TURN IT SLOWLY COUNTERCLOCKWISE TO THE FIRST STOP. ALLOW ALL PRESSURE TO ESCAPE BEFORE REMOVING THE CAP COMPLETLEY.

If the coolant level is below the low mark on the reservoir, add a 50/50 solution of water and antifreeze to the coolant recovery reservoir bringing the level to the full mark.

Be sure that the radiator fins are clear of chaff and dirt to allow free air monement.

Draining and flushing the Cooling system

NOTE: Drain and flush the radiator and engine block every 12 months. Refill with a 50/50 mixture of permanent antifreeze and clear water.

To drain the cooling system:

1. Use a suitable receptacle to catch the used coolant. Remove the radiator cap and open the drain valve, ①, on the left-hand more frame to drain the radiator and engine block.

2. After the coolant has drained, place a water hose in the radiator filler neck and run water through the system. When water is flowing from the block drain valve, start the engine. When the water flowing from the drain valve, is free of discoloration and sediment, stop the engine and remove the hose. Allow all water to drain from the system through the drain valves.

3. Close the drain valve and slowly refill the system with a 50/50 solution of permanent antifreeze and clear water. Fill until the coolant level is approximately 3.8 cm-5 cm below the bottom of the filler neck. Do not fill beyond this level.

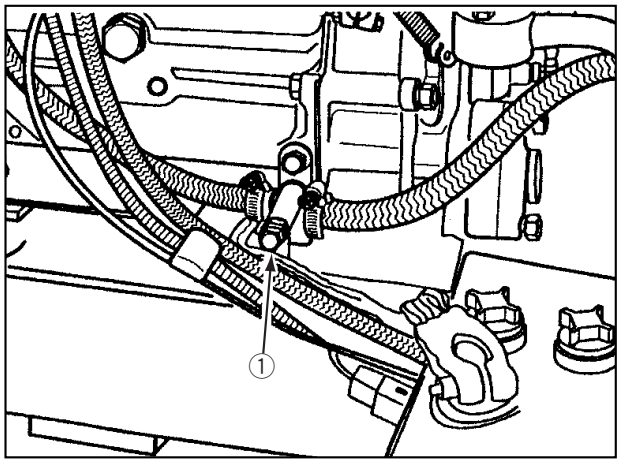
4. Clean the radiator cap and cap seal and install the cap.

5. Fill the coolant recovery reservoir bringing the fluid level up until it is between the full and low marks on the reservoir.

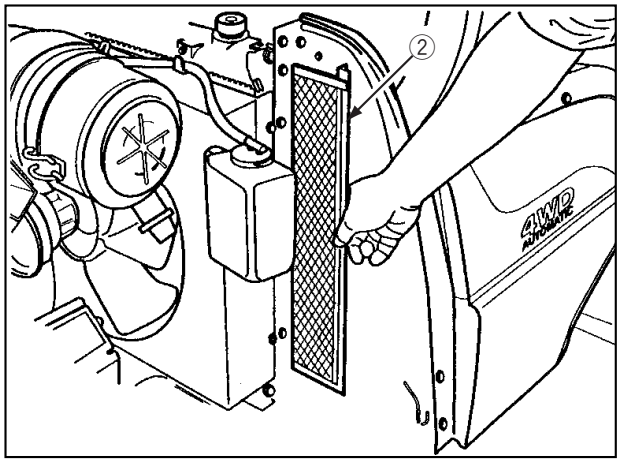
6. Pull down the seat frontward, tilt the front screen ③ frontward and remove chaff, dust, or other foreign substances. The foreign substances can be dropped onto the ground through the rubber at the lower part.

7. Pull out the radiator screen ② sideways and clean it.

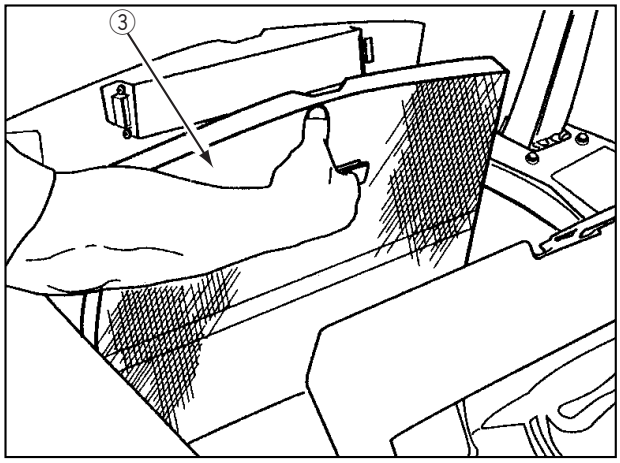
8. Run the engine until normal operating temperature is reached, then stop the engine. Recheck the coolant level when the engine is cold and add additional coolant as necessary.



COOLING SYSTEM
1. Radiator Drain Valve



2. Radiator Screen



3. Front Screen

IMPORTANT: Never run the engine when the cooling system is empty. Do not add cold water or cold antifreeze solution if the engine is hot.

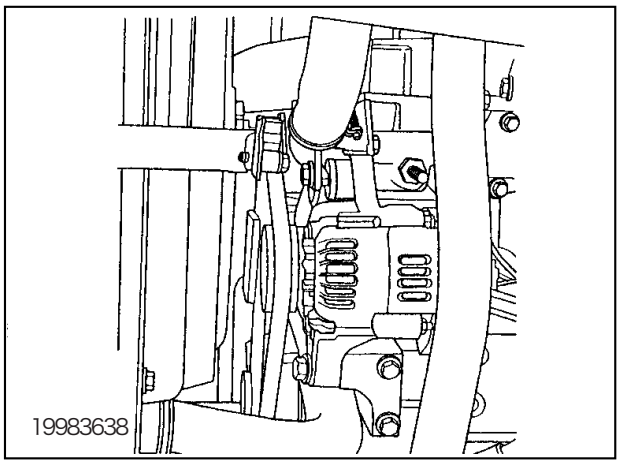
Fan Belt

NOTE: Check the condition of the fan belt after every 50 hours of operation. Check fan belt tension after every 200 hours of operation.

A belt-driven fan located at the front of the engine draws air through the fins of the radiator to lower the temperature of the radiator coolant.

When 9-11 kg (88-108 N) of thumb pressure is applied midway between the belt pulleys, a correctly tightened belt will deflect 10 mm-15 mm.

If the fan belt is slipping, fan efficiency is lowered, resulting in the engine running too hot. If the belt is too tight, the life of the alternator bearing will be shortened. If the fan belt shows signs of cracking or fraying, install a new one.



FAN BELT

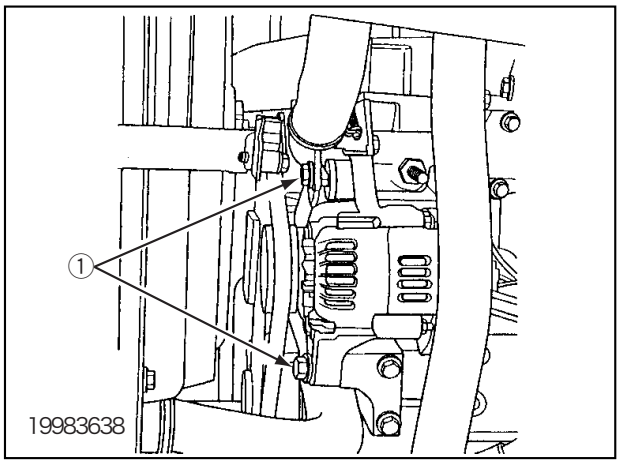
To adjust fan belt tension:

1. Loosen the alternator mounting bolts ①.

WARNING: NEVER ATTEMPT TO LOOSEN OR TIGHTEN MOUNTING BOLTS WITH THE ENGINE RUNNING.

2. Pry the alternator away from the engine and tighten the mounting bolts.

3. Recheck belt deflection.



ALTERNATOR BELT TENSION ADJUSTMENT
1. Alternator Mounting Bolts

ALTERNATOR

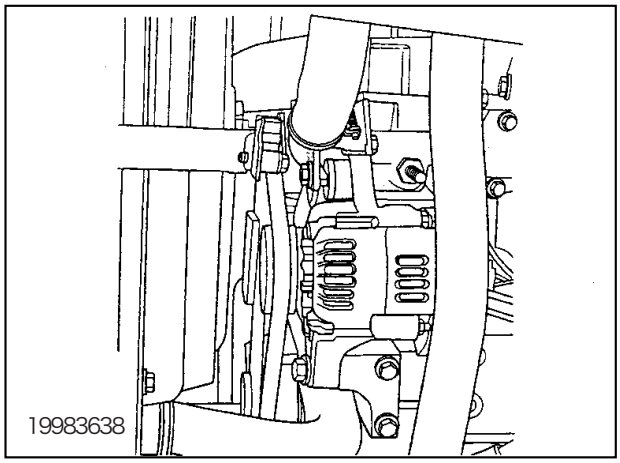
The CM mower 40-amp alternator is belt-driven from the engine crankshaft pulley. It is important that belt slippage does not occur, or the charging system will be affected. To adjust the belt, see the instructions previously given under the“Fan Belt”section.

Other than belt adjustment, the only alternator maintenance required is to periodically inspect the terminals to ensure they are clean and tight. The alternator cooling fan should also be cleaned periodically.

When working on or checking the alternator, adhere to following precautions or alternator damage may occur:

- Do not UNDER ANY CIRCUMSTANCES short the field terminal of the alternator to ground.
- Don not disconnect the alternator output lead or battery cables while the alternator is operating.
- Do not remove the alternator from the tractor without first disconnecting the negative (-) bettery cable. When removing the battery, disconnect the negative (-) cable first.
- To install a battery, MAKE SURE that the positive (+) cable is connected first and that the negative terminal is connected to ground. Reverse polarity will destroy the rectifier diodes in the alternator.

If the battery charge warning light illuminates, indicating that the alternator is not charging the battery, check the fan belt and the wiring connections. If these items are in satisfactory condition and the warning light continues to indicate no charge, consult your SHIBAURA Dealer.

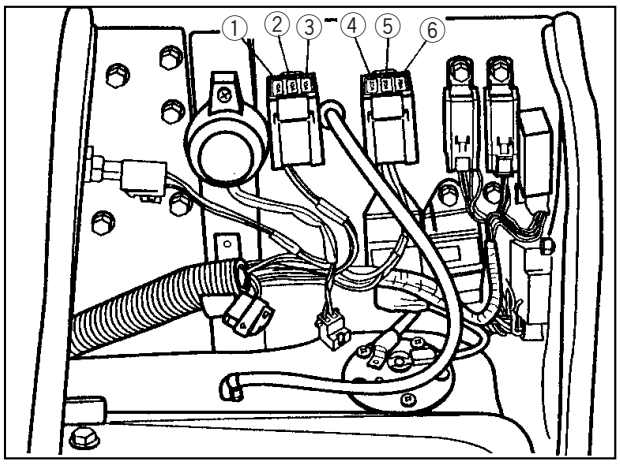


ALTERNATOR

FUSE BLOCK

The fuse block, is located on the left side of the mower compartment. Always replace blown fuses with the size specified for that circuit.

	Fuse size	Circuit protected
1	10 amp	Temperature gauge, fuel gauge Fuel pump, monitor lamp, Alarm buzzer & relay
2	10 amp	Head lamp, meter back light, stop solenoid, safety SW, starter, cruise control (opt.)
3	10 amp	Spare
4	20amp	Cellular-phone socket
5	20amp	Auxiliary P.T.O Wark lamp (opt.) Back buzzer (opt.)
6	20amp	Spare



FUSE BLOCK

FUSIBLE LINK

A fusible link wire ① is used to protect the mower's entire electrical system. If too much amperage passes through this wire it will melt down so that it will no longer allow current to pass (similar to the way a fuse works). The fusible link wire is a red wire that goes from the starter terminal to a connector that links into the main wiring harness.

To replace the fusible link wire:

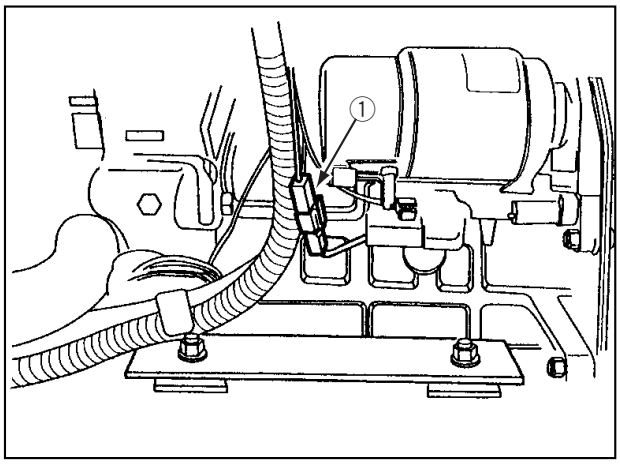
1. Disconnect the negative battery cable from the battery.

2. Unplug the connector linking the wire to the main wiring harness.

3. Remove the old fusible link wire from the starter terminal.

4. Replace the old fusible link wire with a new one-first attaching to starter terminal, and then connecting into the main wire harness.

IMPORTANT: Always replace the fusible link wire with the appropriate fusible link wire for this Mower (part No. 385603370).



ELECTRICAL SYSTEM PROTECTION
1. Fusible Link

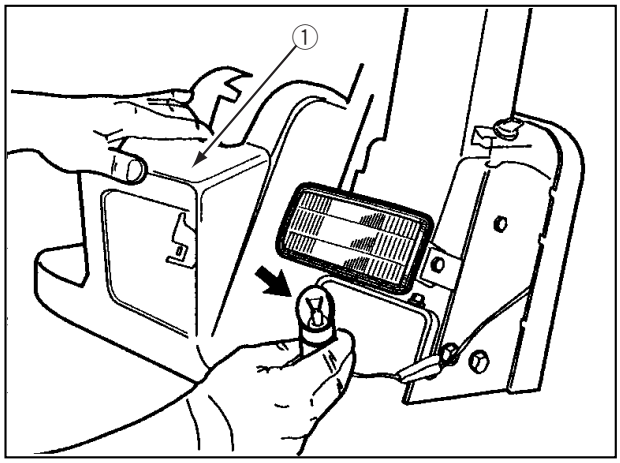
HEAD LAMP

If a head lamp fails to operate, the bulb must be replaced. To change the bulb:

1. Pull out the lower cover ① frontward and remove it.
2. Turn the socket anti-clockwise and remove the socket from the headlamp housing.
3. Remove the bulb.
4. Install a new bulb in the socket and install the socket with bulb in the housing.
5. Install the front cover.

Head Lamp Bulb Type

JIS S25 BA15 12V 23W
(Part No. 385120700)

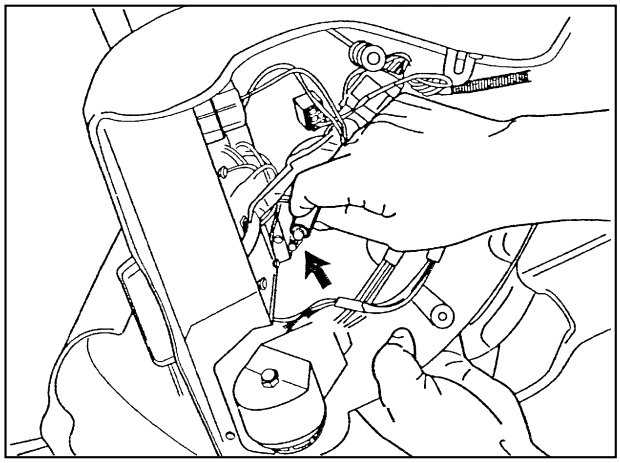


HEADLAMP BULB REPLACEMENT
1. Front Cover
Bulb

INSTRUMENT LIGHTS

To change a burned out instrument bulb:

1. Remove lower cover.
2. Remove 4 screws from the dashboard.
3. Remove the front cover of the dashboard.
4. Turn the bulb together with the socket half a turn counterclockwise and pull it out.
5. Replace the bulb with new one and return the valve and socket to the original place.



INSTRUMENT PANEL AND WARNING LIGHTS
Bulbs

Indicator Bulb Type

(Q'ty 5) JIS T6.4 14V 3W
(Part No. 385470301)

(Q'ty 1) JIS T5 13.5V 2W
(Part No. 385470302)

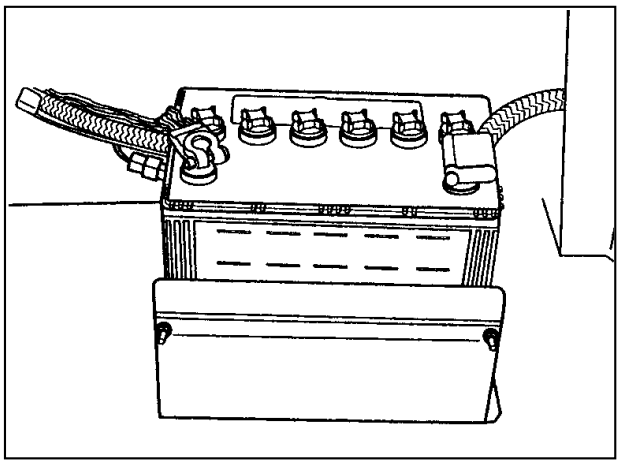
BATTERY

The CM mower is equipped with a BCI group 35, 12-bolt battery with a minimum cold cranking ability of 490 amps at-18°C (0°F)

Make sure the battery connections are tight and free of corrosion. A solution of baking soda and water may be used to wash the outside surface and terminals of the battery when necessary. However, make sure the solution does not get inside the battery. After cleaning, wash the battery with clean water, then apply a small amount of petroleum jelly to the terminals to prevent corrosion.

In freezing temperatures, a good battery charge must be maintained. If the battery becomes discharged or run down, the electrolyte becomes weak and may freeze, causing damage to the case. If you must add water, use distilled water. Add the water just before using the tractor so that the water will mix with the electrolyte during the charging process, thus preventing the water from freezing.

To determine the battery charge, check the specific gravity of the electrolyte.



BATTERY

Checking the Electrolyte Level

NOTE: Check the battery electrolyte level after every 50 hours of operation.

WARNING: ALWAYS CHECK THE ELECTROLYTE LEVEL WITH THE MOWER ENGINE OFF, AS AN EXPLOSIVE GAS IS PRODUCED INSIDE THE BATTERY WHEN THE ALTERNATOR IS CHARGING. DO NOT USE AN EXPOSED FLAME AND DO NOT SMOKE WHEN CHECKING THE BATTERY ELECTROLYTE LEVEL.

To check the battery electrolyte level:

1. Clean the top of the battery, then remove the vent plugs.

2. Add distilled water if the electrolyte level is low. The level is correct when the liquid is 6.35 mm (1/4") above the plates.

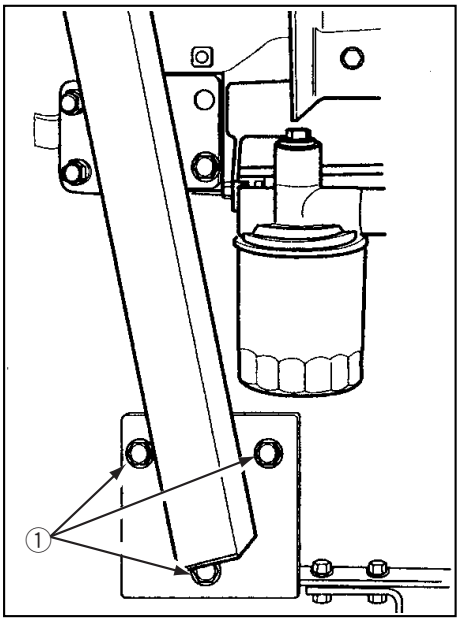
   NOTE: Keep distilled water in a nonmetallic container that is clean and well-covered.

3. Install the vent plug after making sure the vent holes are not blocked. At below freezing temperatures, run the engine for a period of time after adding water, allowing the battery to charge, which prevents the water form freezing.

MAINTENANCE AND INSPECTION OF THE ROLLOVER PROTECTIVE STRUCTURE (ROPS)

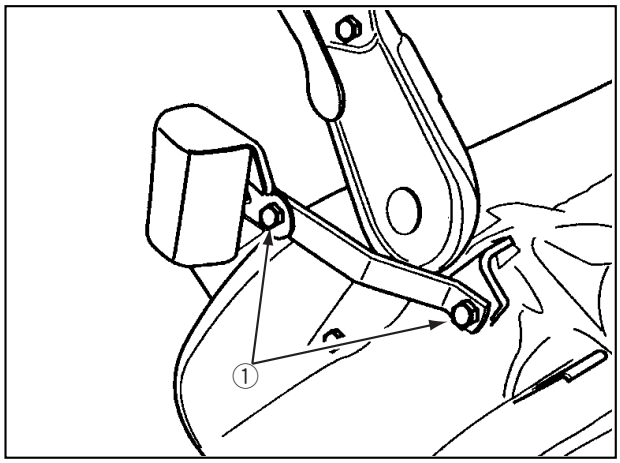
NOTE: Inspect the ROPS after the first 20 hours of operation. Following the initial inspection, check the ROPS after every 500 hours of operation or every six months, whichever comes first.

1. Check the torque of the ROPS mounting bolts, ①. Tighten the bolts to the correct torque of 97 N·m if necessary.



LIFT SIDE ROPS MOUNTING BOLTS

2. Inspect the operator's seat and the mounting parts for the seat belt. Tighten the bolts, ①, to the correct torque of 50.0 N·m if necessary and replace parts that show wear or damage.



SEAT BELT MOUNTING BOLTS

POSSIBLE DAMAGE TO THE ROPS

If the unit has rolled over or the ROPS has been in some other type of accident (such as hitting an overhead object during transport), the ROPS must be replaced to retain the best protection.

Following an accident, check the ROPS, the operator's seat, and the seat belt and seat belt mountings for possible damage, Before operating the machine, replace all damaged parts.

IMPORTANT: Do not attempt to weld or straighten the ROPS.

WARNING: ALWAYS PULL FROM THE MOWER DRAWBAR. NEVER ATTACH CHAINS, ROPES, OR CABLES TO THE ROPS OR CAB FOR PULLING PURPOSES OR THE MOWER WILL TIP BACKWARDS.

WARNING: IF THE ROPS OR CAB IS REMOVED OR REPLACED, MAKE SURE THAT THE PROPER HARDWARE IS USED AND THE RECOMMENDED TORQUE VALUES ARE APPLIED TO THE ATTACHING BOLTS.

WARNING: ALWAYS WEAR YOUR SEAT BELT UNLESS THE MOWER IS NOT EQUIPPED WITH A ROPS OR SAFETY CAB. IN THIS CASE, THE SEAT BELT SHOULD NEVER BE WORN.

TIRES

NOTE: Check tire pressure after every 50 hours of operation or weekly.

Tire inflation pressure affects the amount of weight a tire can carry. Check the air pressure in your Mower tires, refer to"Tire Inflation Pressures". If necessary, adjust the tire pressure, being careful not to overinflate or underinflate. Observe the following guidelines:

- Do not inflate a tire above the maximum pressure shown on the tire. If the tire is not marked, do not exceed the maximum pressure shown in the Tire Inflation chart found in this manual.
- Do not reinflate a tire that has been run flat or seriously underinflated until the tire has been inspected for damage by a qualified person.
- When checking tire pressure, inspect the tire for damaged sidewalls and tread cuts. Neglected damage leads to early tire failure.

WARNING:INFLATING OR SERVICING TIRES CAN BE DANGEROUS. TRAINED PERSONNEL SHOULD SERVICE AND/OR MOUNT TIRES WHENEVER POSSIBLE.

If you must inflate or service tires, follow these safety precautions to avoid injury or fatality.

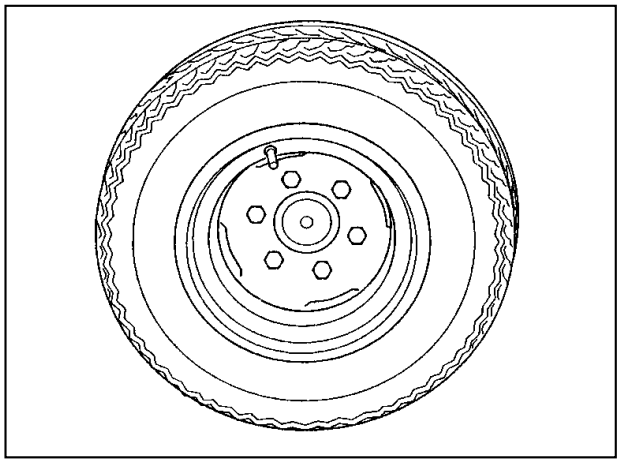
- Make sure the rim is clean and free of rust.
- Lubricate both tire beads and rim flanges with soap solution. Do not use oil or grease.
- Use a clip-on tire chuck with a remote hose and gauge. This allows the operator to stand clear of the tire while inflating.
- NEVER INFLATE TO OVER 240 kPa (2.4 bar) TO SEAT BEADS. If beads have not been seated by the time pressure reaches 240 kPa (2.4 bar), deflate the assembly, reposition the tire on the rim, relubricate both tire bead and rim flanges, and reinflate. Inflation beyond 240kPa (2.4bar) with unseated beads may break the bead or rim with explosive force sufficient enough to cause serious injury.
- After seating the beads, adjust inflation pressure to recommended operating pressure.
- Do not inflate a tire unless the rim is mounted on the Mower or is secured so that will not move if the tire or rim should suddenly fail.
- Do not weld, braze, otherwise repair, or use a damaged rim.
- Never attempt tire repairs on a public road or highway.
- Use jack stands or other suitable blocking to support the Mower while repairing tires.
- Ensure jack has adequate capacity to lift your Mower.
- Place jack on a firm, level surface.
- Do not place any part of your body beneath the Mower or start the engine while the Mower is on the jack.
- Before adding ballast to the tires, refer to the information in this manual on"Mower Weighting."

	CM TIRE INFLATION PRESSURS											
Tire Size	Inflation Pressure											
	kPa	80	100	120	140	160	180	190	200	220	240	260
	bar	0.8	1.0	1.2	1.4	1.6	1.8	1.9	2.0	2.2	2.4	2.6
24x13.00-12 6PR	kg	620	680	785	840	910	975	1020	-	-	-	-
20x 8.00-10 6PR	kg	270	300	320	370	400	430	445	460	485	510	530

NOTE: Do not underinflate or overinflate tires. Do not exceed maximum inflation pressure listed.

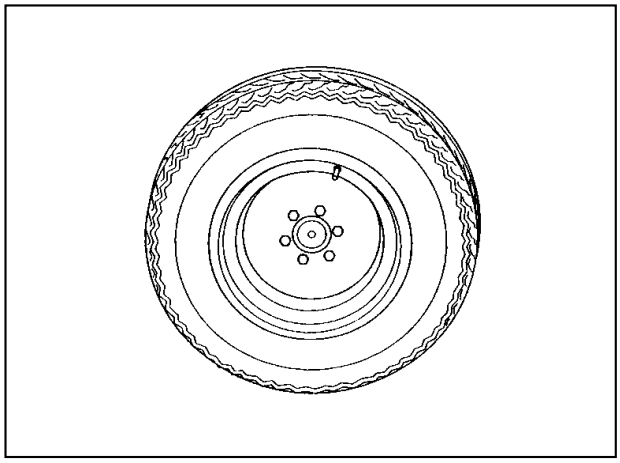
WHEEL BOLT TORQUE

Tighten the wheel bolts to the specified torque anytime the wheel assembly is removed from the mower or the wheel bolts are loosened.



Front Wheel Torque
132±16 N·m

NOTE: Torque for the front wheels is the same for 2WD and FWD axles.



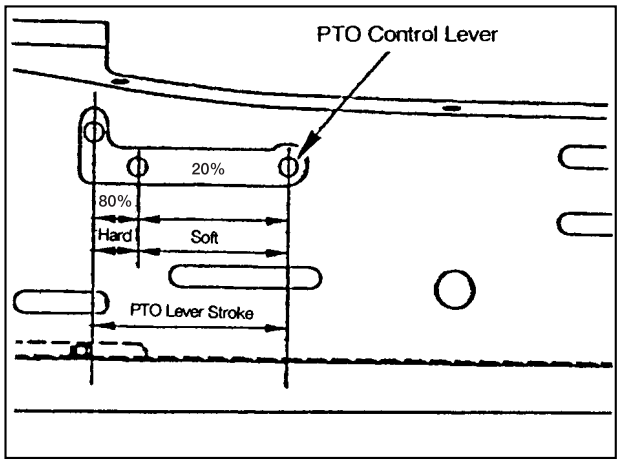
Rear Wheel Torque
50±5.9 N·m

Check wheel bolt torque daily until torque stabilized.

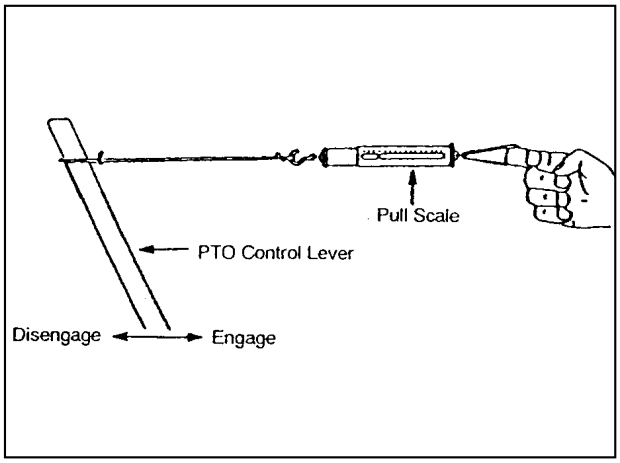
PTO CONTROL LEVER ADJUSTMENT

Note: Adjust the PTO control lever linkage every 100 hours.

1. The PTO control lever must move easily (soft), through the first 20% of travel. The remaining 80% of control lever travel must have a resistance (hard).



2. At the point of resistance (20% into the control lever stroke), attach a pull scale to the PTO control lever. A reading of 5 kgf (11.5 Lbs.) is correct at the point of resistance (20% into the control lever stroke). A reading of 12-13 kg (26.4-28.6 lbs.) is correct at the full engagement point (the final 80% of control lever travel). If the control lever stroke is not correct, or the amount of resistance on the pull scale at the point of resistance is incorrect, proceed to step 3.

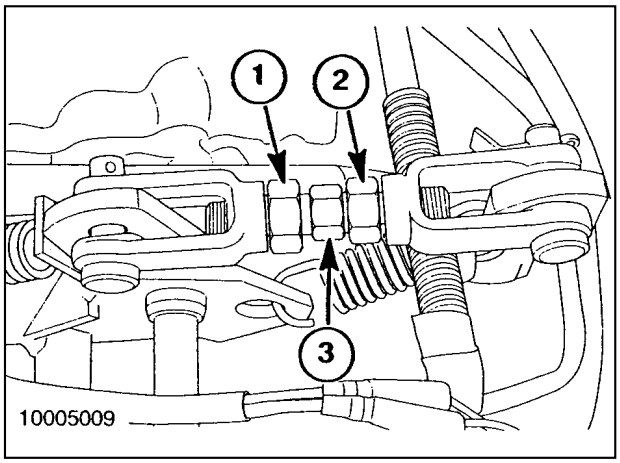


NOTE: The adjustment bolt on the PTO adjustment linkage uses left-hand threads.

3. Loosen the locknuts, 1 and 2, on the PTO adjustment linkage.

4. Turn the adjustment rod, 3 and recheck the resistance on the pull scale and the control lever stroke. Repeat this step until the control lever stroke and the pull resistance are correct.

5. Tighten the locknuts, 1 and 2.



STORING THE MOWER UNIT

A CM Mower that is to be stored for an extended period should be protected during storage. The following is a suggested list of operations to be carried out.

1. Thoroughly clean the unit. Use touch-up paint where necessary to prevent rust.

2. Check the unit for worn or damaged parts. Install new parts as required.

3. Raise the lift arms hydraulically to their fully raised position so the lift cylinder is in a fully retracted position.

   This will protect the cylinder rod surfaces from corrosion.

4. Lubricate the unit. Drain and refill the transmission, hydraulic system and front axle with new oil. Drain the engine oil and refill with new lubricating oil. Also clean the air cleaner.

5. If the CM Mower is stored or removed from operation for an extended period, special precautions should be taken to protect the fuel injection pump and the injector nozzle against corrosion and gumming during the storage period.

- Before storing, the fuel system should be flushed with a special oil, a quantity of which will remain in the system when the engine is shut down for storage.

- Special diesel fuel system flushing oils are available from most oil companies. If special flushing oil is not readily obtainable, mix 0.5 liters of SAE 10 non-detergent engine oil with 10 liters or No. 2 diesel fuel.

- Drain the fuel tank and pour 7 liters of the special flushing oil (or lubricating mixture) in the fuel tank.

- Run the engine for 10 minutes to ensure complete distribution of the special oil through the injection pump and fuel injectors. There is no need to remove the injector nozzles.

- Fill the fuel tank with No. 1 diesel fuel.

I*MPORTANT: Do no use No. 2 diesel fuel for winter storage because of wax separation and setting at low temperature.*

6. Open the drain valve of the radiator and the engine block. Flush the system, close the drain valve, and fill with a 50/50 solution of permanent antifreeze and clear water.

7. Remove the battery and clean it thoroughly. Be sure that it is fully charged, and that the electrolyte is at the proper level. Place it in storage in a cool, dry place above freezing temperature. The battery should be charged periodically during storage.

8. Place blocking under the front and rear axles to remove the weight from the tires.

A Commercial Mower that has been placed in storage should be completely serviced in the following manner before using.

1. Inflate the tires to the recommended pressures, and remove the blocking.

2. Check the oil level in the engine crankcase, the common sump (for the hydraulic lift, transmission, front axle and power steering), and rear axle.

3. Install a fully charged battery.

4. Check the cooling system for proper level of 50/50 solution of antifreeze and clear water.

5. Start the engine and allow it to idle a few minutes. Be sure the engine is receiving lubrication and that each control is functioning correctly.

6. Drive the unit without a load and check to be sure its operating satisfactorily.

CAUTION: TO AVOID PERSONAL INJURY:

- **TO REDUCE FIRE HAZARDS, ALLOW THE ENGINE AND EXHAUST SYSTEM TO COOL BEFORE STORING THE VEHICLE IN AN ENCLOSED SPACE OR NEAR COMBUSTIBLE MATERIALS.**

- **DO NOT CLEAN THE MACHINE WITH ENGINE RUNNING.**

- **WHEN STORING, REMOVE THE KEY FROM THE KEY SWITCH TO AVOID UNAUTHORISED PERSONS FROM OPERATING THE MACHENE AND GETTING INJURED.**

SECTION 4
SPECIFICATION

	CM314	CM374
ENGINE		
Type	Diesel	Diesel
Engine Gross Horsepower	22.4 kw (30HP)	26.8 kw (36HP)
Cylinders	3	3
Bore	84 mm	84 mm
Stroke	90 mm	100 mm
Displacement	1.496 liters	1.662 liters
Compression Ratio	22.2 : 1	23.1 : 1
Firing Order	1- 2- 3	1- 2- 3
Low idle Speed	1200 rpm	1200 rpm
Rated Speed	2700 rpm	2700 rpm
Valve Clearance (Cold):		
intake	0.20 mm	0.20 mm
Exhaust	0.20 mm	0.20 mm
CAPACITIES		
Fuel Tank	50.5 liters	50.5 liters
Cooling System	5.1 liters	5.3 liters
Engine Crankcase:		
Less Filter	4.8 liters	4.8 liter
With Filter Change	5.0 liters	5.0 liters
Front Axle & Transmission (includes Hydraulics)	21.0 liters	21.0 liters
Rear Axle Center Case & Final Case	2.3 liters	2.3 liters
COOLING SYSTEM		
Type	Pressurized Liquid with Re circulating Bypass	Pressurized Liquid with Re circulating By pass
Water Pump:		
Type	Centrifugal	Centrifugal
Drive	V- Belt	V- Belt
Belt Deflection	10 mm-15 mm when 9-11 kg thumb pressure is applied midway between belt pulleys	10 mm-15 mm when 9-11 kg thumb pressure is applied midway between belt pulleys
Fan Diameter	360 mm	360 mm
Thermostat :		
Start to Open	80~84 °C	80~84 °C
Fully Open	93 °C	93 °C
Radiator Cap	0.9 bar	0.9 bar

ELECTRICAL SYSTEM

Alternator ·····	12-volt, Heavy Duty,40 amps
Battery ·····	12-volt, 53.9 amp hour rating w / negative ground, 490 CCA
Stating Motor ·····	Solenoid Pre-Engaged Reduction

FUEL SYSTEM

Fuel Type ·····	Diesel	Diesel
Type of Fuel to Use if Above 5°C ···	No.2-Diesel Cetane Rating: Minimum 40	No.2-Diesel Cetane Rating: Minimum 40
Type of Fuel to Use if Below 5°C ···	No.1-Diesel Cetane Rating: Minimum 40	No.1 -Diesel Cetane Rating: Minimum 40
Injection Pump:		
Type ·····	In- Line	In-Line
Timing ·····	21.0° BTDC	21.0° BTDC

BRAKES

Type ·····	Wet Disc Final Brake	
Disc 2 Diameter ·····	155 mm x 123 mm	155 mm x 123 mm

STEERING

Type ·····	Tilt. Telescopic Hyd Power	
Lock-to-Lock: ·····	R 2.1	L 2.5
Toe- in ·····	0~5 mm	0~5 mm
Turning Radius Inside Front tire(w/o Brakes)·····	750 mm	750 mm

FRONT POWER TAKE - OFF

Type ·····	Wet multi plates	Wet multi plates
Shaft: PTO ·····	25.4 Φ spline	25.4 Φ spline
PTO RPM (Engine Speed at 2700 rpm)	2209 rpm	2209 rpm
Horsepower PTO (Observed) ·····	15.7 kw (21 HP)	18.8 kw (25.2 HP)

MID POWER TAKE - OFF

Type ·····	Live	Live
Shaft: PTO ·····	20 Φ 6 mm key way	20 Φ 6 mm key way
PTO RPM (Engine Speed at 2700 rpm)	2700 rpm	2700 rpm
Horsepower PTO (Observed) ·····	7.4 kw (10 HP)	7.4 kw (10 HP)

HYDRAULIC LIFT SYSTEM

Type ·····	Open Center	Open Center
Pump Type ·····	Gear	Gear
Pump Capacity (at Eng 2700 rpm)	9.1 l / min	9.1 l / min
System Relief Valve Setting ·····	9.8 Mpa	9.8 Mpa

TRANSMISSION

Type ·····	HST with 2 Range Gear Drive	
4 WD Drive ·····	Auto 4WD or Full 4WD	
Speed		
With STD Tire at 2700 rpm Engine Speed		
Gear position		
Forward ; L ·····	0~10.0 Km/h	0~10.0 Km/h
Forward ; H ·····	0~24.5 Km/h	0~24.5 Km/h
Reverse ; L·····	60%~70% of Forward Speeds	
Reverse ; H ·····	60%~70% of Forward Speeds	

TIRES

FRONT ; STD ·····	24 x13.00-12 6PR	24 x13.00-12 6PR
REAR ; STD ·····	20 x 8.00-10 6PR	20 x 8.00-10 6PR

WHEEL BOLT TORQUES

Front ; STD ·····	132 ± 16 N-m	132 ± 16 N-m
Rear ; STD ·····	50 ± 5.9 N-m	50 ± 5.9 N-m

ROPS ATTACHING BOLT TORQUES

ROPS to Lower ROPS ·····	157 ± 9.8 N-m	157 ± 9.8 N-m
Seat Belt ·····	50 ± 5.9 N-m	50 ± 5.9 N-m

GENERAL DIMENSION

①LENGTH ·····	2145 mm	2145 mm
②WHEEL BASE ·····	1250 mm	1250 mm
③HEIGHT:		
Center of Steering Wheel (return position)		
STD Tire ·····	1415 mm	1415 mm
④Top of ROPS		
STD Tire		
Up Position ·····	1935 mm	1935 mm
Down Position ·····	1225 mm	1225 mm
⑤WIDTH		
Rear Axle Outside to Outside:		
Dished In only ·····	1190 mm	1190 mm
Front Axle Outside to outside		
STD tire		
Dished In ·····	1305 mm	1305 mm
Dished Out ·····	1365 mm	1365 mm
⑥MINIMUM GROUND CLEARANCE:		
STD Tires ·····	150 mm	150 mm

WHEEL TREAD SETTNGS:

FRONT:		
STD Tire		
Dished In ·····	990 mm	990 mm
Dished Out ·····	1050 mm	1050 mm
REAR STD ·····	995 mm	995 mm

WEIGHT:

STD Tire with ROPS: ·····	755 kg	770 kg
CAST IRON WEIGHTS		
Rear End (Optional) ·····	30 kg x 5 (max)	30 kg x 5 (max)

TEST DATA

SOUND MEASUREMENTS

Sound Power

Cutting Attachment : CM-180P
CM314 ・・・・・・・105dB(A) @2100 rpm
CM374 ・・・・・・・105dB(A) @2100 rpm

Cutting Attachment : CM-180L
CM314 ・・・・・・・105dB(A) @2100 rpm
CM374 ・・・・・・・105dB(A) @2100 rpm

Cutting Attachment : CM-150P
CM314 ・・・・・・・105dB(A) @2400 rpm
CM374 ・・・・・・・105dB(A) @2400 rpm

Cutting Attachment : SCM60S
CM314 ・・・・・・・105dB(A) @2500 rpm
CM374 ・・・・・・・105dB(A) @2500 rpm

Sound Pressure (at operators ear)

Cutting Attachment : CM-180P
CM314・・・・・・・・87dB(A) @2100 rpm
CM374・・・・・・・・87dB(A) @2100 rpm

Cutting Attachment : CM-180L
CM314・・・・・・・・85dB(A) @2100 rpm
CM374 ・・・・・・・85dB(A) @2100 rpm

Cutting Attachment : CM-150P
CM314・・・・・・・・86dB(A) @2400 rpm
CM374・・・・・・・・87dB(A) @2400 rpm

Cutting Attachment : SCM60S
CM314・・・・・・・・86dB(A) @2500 rpm
CM374・・・・・・・・87dB(A) @2500 rpm

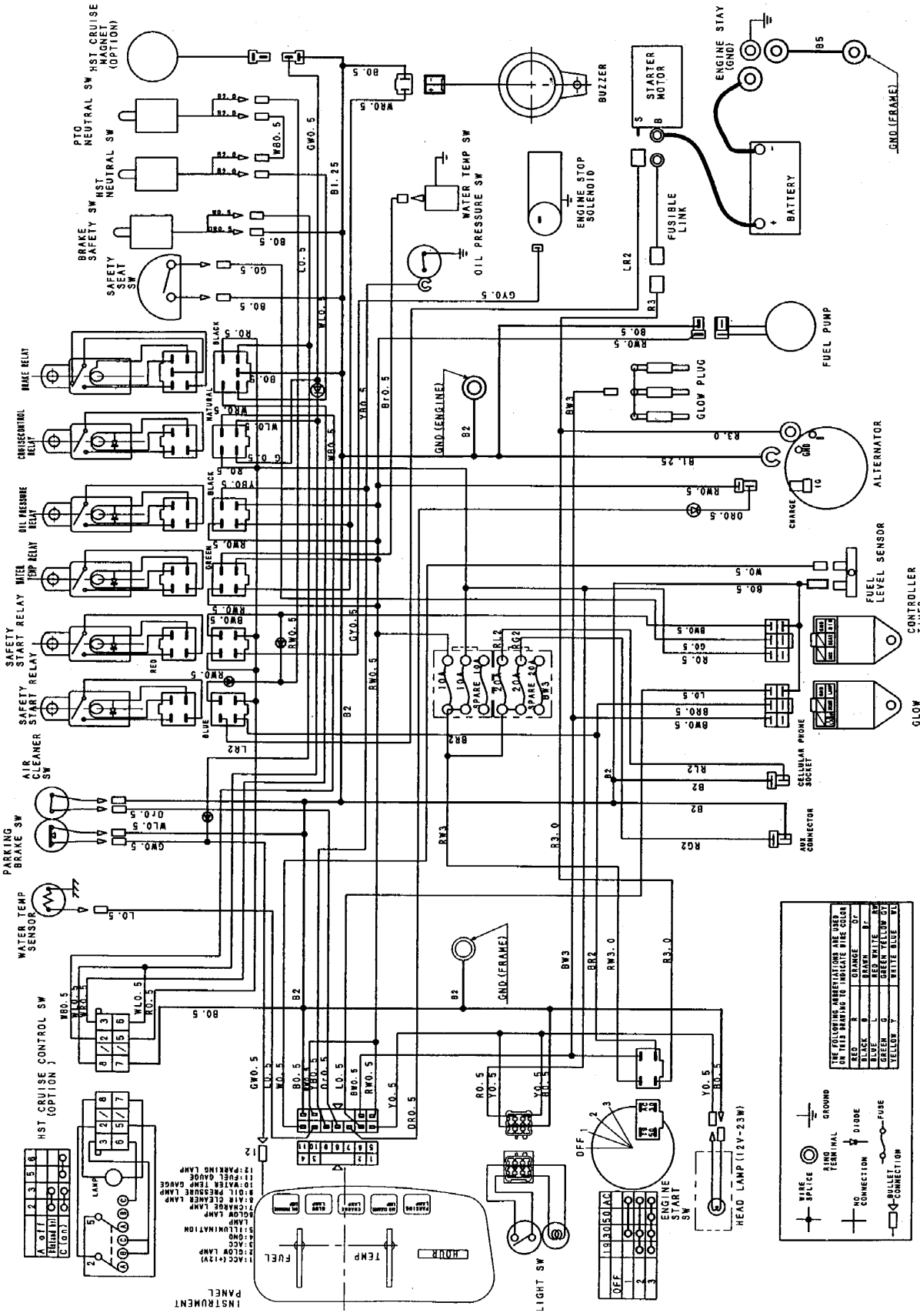
VIBRATION

Whole body ・・・・・below 0.32m／s2

Hand / arm ・・・・・below 2.5m／s2

Vibration evaluated base on EN836 (Annex G)
(without grasscollector)

Wiring Diagram



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PRE-DELIVERY SERVICE
CHECK AND ADJUST AS REQUIRED

INOPERATIVE SERVICE CHECKS

1. Tire pressure ☐
2. Air cleaner element and hose connections ☐
3. Radiato coolant level ☐
4. Fan belt tension ☐
5. BAttery cleanliness, vent openings, electrolyte level, and charge ☐
6. Engine oil level ☐
7. Transmission and front axle oil level ☐
8. Brake adjustment and pedal equalizaion ☐
9. Front whell hub bolts for tightness ☐
10. Rear wheel spindle nuts for tightness ☐
11. Rear wheel toe-in ☐
12. Fuel level ☐
13. Sheet metal and paint condition ☐
14. Drain diesel fuel filter ☐

SAFETY ITEMS CHECKS

1. Safety decals installed ☐
2. Neutral start switch operation ☐
3. Parking brake & latch operation ☐
4. Operator's Manual ☐

PERFORMANCE SERVICE CHECKS

All opeating checks are to be performed with the Front Mower at normal operating temperature.

1. Lights and instruments for proper operation, and fuel shut down with key switch OFF ☐
2. Fluid and oil leaks ☐
3. Maximum no-load speed and idle speed adjustments ☐
4. PTO engagement and disengagement ☐
5. Hydraulic system:
   - Lift control lever operation ☐
   - Weight transfer valve operation ☐
6. Full-time-FWD operation ☐
7. Operation of HST ☐
8. HST speed control level ☐
9. Operation of safety devices:
   - PTO disengagement system ☐
   - Engine stop system (seat) ☐

MODEL_____

INSPECTION PERFORMED
WARRANTY EXPLAINED

SERIAL NO._____

OWNER'S SIGNATURE DATE DEALER'S SIGNATURE DATE

50-HOUR SERVICE
CHECK AND ADJUST AS REQUIRED

INOPERATIVE SERVICE CHECKS

1. Tire pressure ☐
2. Check air cleaner hose connection ☐
3. Replace diesel fuel filter(s) ☐
4. Tighten injector line fittings ☐
5. Radiato coolant level ☐
6. Fan belt tension ☐
7. Battery cleanliness and vent openings, electrolyte level and charge ☐
8. All electrical cables, terminals and wires ☐
9. Drain and refill engine oil ☐
10. Replace engine oil filter ☐
11. Transmission and front axle oil level ☐
12. Rear axle oil level ☐
13. Replace hydraulic system oil filter ☐

OPERATIVE SERVICE CHECKS

1. Lights and instruments for proper operation, and fuel shut down with key switch OFF ☐
2. Fluid and oil leaks ☐
3. Maximum no-load speed and idle speed adjustments ☐
4. Starting and starter safety switches ☐
5. Hydraulic system:
   - Lift control lever operation ☐
6. Operation of safety devices:
   - PTO disengagement system ☐
   - Engine stop system ☐

OPERATIVE SERVICE CHECKS

1. Engine operation including throttle and governor operation ☐
2. HST tansmission ☐
3. Steering control ☐
4. Differential lock engagement and disengagement ☐
5. Brake action ☐
6. All optional equipment and accessories ☐

MODEL_____

INSPECTION PERFORMED

SERIAL NO._____

OWNER'S SIGNATURE DATE DEALER'S SIGNATURE DATE

PRE-DELIVERY SERVICE
CHECK AND ADJUST AS REQUIRED

INOPERATIVE SERVICE CHECKS

1. Tire pressure ☐
2. Air cleaner element and hose connections ☐
3. Radiato coolant level ☐
4. Fan belt tension ☐
5. BAttery cleanliness, vent openings, electrolyte level, and charge ☐
6. Engine oil level ☐
7. Transmission and front axle oil level ☐
8. Brake adjustment and pedal equalizaion ☐
9. Front whell hub bolts for tightness ☐
10. Rear wheel spindle nuts for tightness ☐
11. Rear wheel toe-in ☐
12. Fuel level ☐
13. Sheet metal and paint condition ☐
14. Drain diesel fuel filter ☐

SAFETY ITEMS CHECKS

1. Safety decals installed ☐
2. Neutral start switch operation ☐
3. Parking brake & latch operation ☐
4. Operator's Manual ☐

PERFORMANCE SERVICE CHECKS

All opeating checks are to be performed with the Front Mower at normal operating temperature.

1. Lights and instruments for proper operation, and fuel shut down with key switch OFF ☐
2. Fluid and oil leaks ☐
3. Maximum no-load speed and idle speed adjustments ☐
4. PTO engagement and disengagement ☐
5. Hydraulic system:
   - Lift control lever operation ☐
   - Weight transfer valve operation ☐
6. Full-time-FWD operation ☐
7. Operation of HST ☐
8. HST speed control level ☐
9. Operation of safety devices:
   - PTO disengagement system ☐
   - Engine stop system (seat) ☐

MODEL_____

INSPECTION PERFORMED
WARRANTY EXPLAINED

SERIAL NO._____

OWNER'S SIGNATURE DATE DEALER'S SIGNATURE DATE

50-HOUR SERVICE
CHECK AND ADJUST AS REQUIRED

INOPERATIVE SERVICE CHECKS

1. Tire pressure ☐
2. Check air cleaner hose connection ☐
3. Replace diesel fuel filter(s) ☐
4. Tighten injector line fittings ☐
5. Radiato coolant level ☐
6. Fan belt tension ☐
7. Battery cleanliness and vent openings, electrolyte level and charge ☐
8. All electrical cables, terminals and wires ☐
9. Drain and refill engine oil ☐
10. Replace engine oil filter ☐
11. Transmission and front axle oil level ☐
12. Rear axle oil level ☐
13. Replace hydraulic system oil filter ☐

OPERATIVE SERVICE CHECKS

1. Lights and instruments for proper operation, and fuel shut down with key switch OFF ☐
2. Fluid and oil leaks ☐
3. Maximum no-load speed and idle speed adjustments ☐
4. Starting and starter safety switches ☐
5. Hydraulic system:
   - Lift control lever operation ☐
6. Operation of safety devices:
   - PTO disengagement system ☐
   - Engine stop system ☐

OPERATIVE SERVICE CHECKS

1. Engine operation including throttle and governor operation ☐
2. HST tansmission ☐
3. Steering control ☐
4. Differential lock engagement and disengagement ☐
5. Brake action ☐
6. All optional equipment and accessories ☐

MODEL_____

INSPECTION PERFORMED

SERIAL NO._____

OWNER'S SIGNATURE DATE DEALER'S SIGNATURE DATE

Certificate of Conformity for Europe

I, the undersigned, certify that the products described below conforms to the specifications of Directive 89/336/EEC as amended by Directive 91/263/EEC, 92/31/EEC and 93/68/EEC.

Harmonized Standard : EN ISO 14982
Products :

1.Category : Professional Mower
2.Make : SHIBAURA
3.Model : CM284,CM364

Tokyo, March 29, 2001

Yoshimasa Kitou Y.Kitou
General Manager
Tractor Division
Ishikawajima-Shibaura Machinery Co.,Ltd.
5-32-7, Sendagaya, Shibuya-Ku,
Tokyo, JAPAN

Certificat de Conformité pour l'Europe

Je, soussigné, certifie que les produits décrits ci-dessous sont conformes aux spécifications de la Directive 89/336/CEE modifée par les Directive 91/263/CEE, 92/31/CEE et 93/68/CEE.

Standard Harmonisé : EN ISO 14982
Produits :

1.Catégorie : Tondeuses professionnelles
2.Marque : SHIBAURA
3.Modele : CM284,CM364

Tokyo, le 29 Mars 2001

Yoshimasa Kitou Y.Kitou
General Manager
Tracteur Division
Ishikawajima-Shibaura Machinery Co.,Ltd.
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